Engineering Library
PERIODICAL ROOM
RECEIVED
JUN 10 1916
UNIV. OF MICH.

Telephony.

THE AMERICAN TELEPHONE JOURNAL

Published Every Saturday.
Telephony Publishing Company.
Volume 70, No. 24.

CHICAGO, JUNE 10, 1916.

Single Copies, 10 Cents
Yearly, U. S. A., $3; Canada, $4;
All Other Countries, $5

H. G. WEBSTER
CONSULTING ENGINEER
MONADNOCK BLOCK
CHICAGO

Telephone Engineering.
Automobile Accessories.
Electric Signaling.
Patent Investigations.
Expert Testimony.

American Steel & Wire Co.'s
W. & M.
TELEPHONE WIRE
AMERICAN STEEL & WIRE CO.
Chicago New York Cleveland
Worcester Pittsburgh Denver

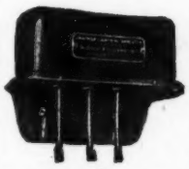
EVERSTICK
ANCHORS
You will go around in a circle, if you are looking for a better anchor than the EVERSTICK—there's a reason.
Write for Literature.
Everstick Anchor Co.
St. Louis, Mo.

Order it from our Nearest Branch

Automatic Electric Co.
Chicago, Ill., U. S. A.
Makers of 600,000 Automatic Telephones
We Have Branches in
New York—46 W. Broadway.
Buffalo—332 Ellicott St. Toledo—Second Nat. Bank Bldg.
Boston, Mass.—Tremont Bldg. Pittsburgh—First Nat. Bk. Bldg.
Detroit, Mich.—Ford Bldg. Philadelphia, Pa.—Bourse Bldg.
St. Louis, Mo.—Syndicate Trust Bldg.

CEDAR POLES
Wire or write for delivered prices
NATIONAL POLE CO.
ESCANABA :: :: MICH.

Chapman Lightning Arresters



drain a line of lightning and static charges as naturally as a sewer system drains a street of water.

Manufactured by
MINNESOTA ELECTRIC CO.
MINNEAPOLIS, MINN.

"Rubber Covered Wire and Cables"

"The Standard for Telephone Service"

IF IT'S PARANITE IT'S RIGHT

Substation Wire; Pothead Wire; Distributing Wire; Bridle Wire; Flameproof Wire and Iron Core Drop Wire; Rubber Covered Braided Cables, Lead Encased and Armored Cables.

Factory and General Offices
INDIANA RUBBER and INSULATED WIRE COMPANY, JONESBORO, IND.
Chicago Office—210 Desplaines Street

FORT WAYNE PRINTING COMPANY
FORT WAYNE, IND.
Makers of
Telephone Directories
—
Write
For Prices

Telephone Cables
ALL SIZES AND CAPACITIES

Hard Drawn Copper Telephone Wire.
Galvanized Iron Telephone Wire.
Siemens-Martin and High Strength Strands.

AMERICAN ELECTRICAL WORKS
PHILLIPSDALE, R. I.
CHICAGO 112 W. Adams St. CINCINNATI Traction Bldg. NEW YORK 165 Broadway

THE LAST WORD ON
SOLDERING

All the kinks we have printed in the different issues of this Big Sheet have been published in a book 5 x 8 inches.

This is very convenient for ready reference—especially valuable for beginners—as it also has a very comprehensive introductory article on Soldering.

ANY INTELLIGENT BOY CAN LEARN TO SOLDER BY READING THE INSTRUCTIONS IN SOLDERING KINKS AND FOLLOWING THEM

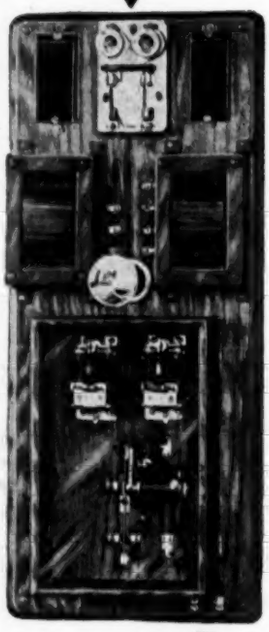
Sent Post Paid Anywhere in the U.S.A. **25 cents**

Special Prices for Quantities.
A Valuable Text Book for Technical Schools

The M. W. Dunton Co.
Providence, R. I., U. S. A.

Ring Your Telephones From Your Lighting Circuit

Connect Your Lighting Circuit Here



50c to $1.00 per month Total Operating Cost

No Dry Batteries

No Wet Batteries

For Power Ringing in Your Exchange

Operates Off A.C. or D.C. Current Lighting Circuit

Connect Your Ringing Leads Here

Our standard ringing machine of this type, for straight line ringing, is the CODE NO. 7-A Frequency Converter. Operates off 110 volt 60 cycle A. C. circuit. Can also be provided with positive and negative pulsating attachment for selective ringing.

We make ringing converters which will operate off any lighting circuit.

Give us the voltage and frequency of your lighting system and we will advise the machine to use and saving which it will effect for you.

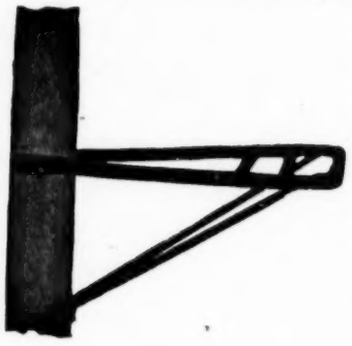
Converters Shipped on 30 Days' Approval

Cracraft, Leich Electric Co.

Genoa, Ill. **Kansas City, Mo.**

SURE SECURITY SPECIALTIES

Security Pole Seat, Number Two



A strong but light weight seat, angle iron construction with continuous rim, bent, but not notched at corners thereby insuring a seat of Great Strength and Safety, coupled with Neat Appearance.

88 CENTS EACH

Security Cable Car, Number Three

designed for "trouble shooting" and emergency work. Is used with a lineman's safety strap. Can be adjusted for height.

Only $3.95

Security Cable Pole House, Number One

A two compartment house, with slanting roof. Double doors closing against shoulder makes house absolutely dry and waterproof. Distributing Panels made from oak with hard rubber fronts, on which contacts are mounted. Compact, convenient and economical. Sizes 25 to 200 pairs.

Prices on Application

Write for Bulletin No. 6

The F. Bissell Company

226-230 Huron Street

TOLEDO - - - - - OHIO

Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves

PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY
MONADNOCK BLOCK, CHICAGO

H. B. McMEAL, PRESIDENT AND EDITOR. H. D. FARGO, SECRETARY AND TREASURER. J. C. KELSEY, VICE-PRESIDENT AND FINANCIAL EDITOR.
S. R. EDWARDS, MANAGING EDITOR. J. R. HASTIE, VICE-PRESIDENT AND ADVERTISING MANAGER. W. E. RAYMOND, SUBSCRIPTION MANAGER.

Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1897

Volume 70
Number 24

CHICAGO, SATURDAY, JUNE 10, 1916

Subscription—10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada; $5 Other Countries

Bill the Troubleman Says:

"If either of the political parties would adopt a plank to protect small business from unfair methods of monopoly and special privilege, it would make a strong appeal to the average citizen who asks from the government only a fair field and no favor."

Where is the Bell Steering?

The action of TELEPHONY in calling attention to the unfair combination of the Western Electric Co. and the American Telephone & Telegraph Co. in the telephone industry of this country, has caused considerable comment throughout the field. Many of our readers have taken the trouble to write letters commending this criticism and urging that steps be taken to end this unfair competition. These, of course, come from Independents. TELEPHONY has also received letters expressing no sympathy with such criticism, but, on the other hand, urging that, instead of keeping up a fight, this paper should devote its pages to instructive material for the information of the men who are giving telephone service without regard to Independent or Bell affiliations.

One of this class says in his letter: "Formerly, I thoroughly enjoyed TELEPHONY as it contained so much valuable information, both from an instructive standpoint, as well as a news standpoint. But lately the whole paper has seemed to have been turned over to ranting on the fancied evils of the Western Electric-Bell combine to the exclusion of practically everything else. I have held off paying this year's subscription thinking that sooner or later the paper would get back to its original standing. You may send me a statement up to the present issue and I will mail you a check for it. You may keep my name on your list as a prospective subscriber as soon as the paper gets back to normal again."

That letter, needless to say, comes from a man connected with a Bell company. It has a friendly tone that we appreciate, and we are frank to say that it is only natural that he would prefer to read other things than attacks on the corporation from which he gets his bread and butter. Loyalty to one's employer demands that. Of course, he exaggerates when he says that the whole paper is devoted to criticism of the Bell unfair competition. At no time has TELEPHONY neglected its regular news and technical departments even when the news developments made the Western Electric-Bell alliance most glaringly prominent.

We have no quarrel with the rank and file in the Bell organization. The men in both the Independent and Bell companies, who are giving telephone service and who are working out telephone problems, are the objects of our most friendly interest. TELEPHONY wishes every telephone man in the United States were a subscriber, and would like to form an alliance among them all to bring the telephone to its greatest usefulness. Therein would lie the greatest success for all interests.

No, our quarrel is not with the men in the Bell ranks; our criticism is against the policy and principles of the Bell organization, which induce that corporation to persist in its unfair competition against the Independent interests. The big army of Bell employes is not to be blamed for this unfair condition. In fact, many of them privately admit that the situation is inherently wrong. It is the officers of the Bell organization who, with the same arrogance that brought big business into disrepute in recent years, are driving blindly ahead on the absurd assumption that they have the divine right to monopolize not only the operating, but the manufacturing branch of the telephone business.

Henry La Fontaine, a distinguished Belgian statesman, has been in the United States the last year studying American civilization. In a recent article he expressed his disappointment because the American press, in its effort

to catch the popular ear, fails to fulfill its mission as a teacher. He said: "Daily into many millions of human brains the American press imprints facts which are generally of so little importance that in thirty days they are forgotten, and it never tries to sow ideas which would bear everlasting fruit."

TELEPHONY has endeavored to emphasize the idea which is also a fact, that the Bell is dead wrong in its relationship, as a public utility, with its factory, and in its merchandizing methods that breed injustice and unfair competition. At the same time this paper has not neglected its duty of giving its subscribers news and technical information concerning the telephone industry. These are important, but it is equally important to condemn the grievous wrong the Bell is doing the telephone business as a whole in maintaining its present attitude.

For the sake of the Bell, as well as for the sake of the Independents, we protest against this shameful instance of special privilege. For the sake of the telephone business as a whole it should be stopped. If it continues, the question will be asked if the Bell telephone company is bigger than the United States government. And, if that query is propounded, the government may have to answer by taking over the American Telephone & Telegraph Co. and running its business from Washington.

Does the Bell want government ownership?

Study the Prompt-Book

By HERBERT KAUFMAN

"Some day" isn't on the calendar. "Next week" is the 32nd of the month. "Tomorrow" is a promissory note without a date. Opportunity won't accept it. Do when you're due.

The "meant" in postponement won't help matters. Results are ignorant of intentions. The race you could have won isn't figured in your average.

The backbone of knowledge is whenness. In an emergency, a slow mind is little better than no mind. Waiters aren't chosen for responsible jobs.

Get a prompt-book and learn the cues of success. Rig a clock and speedometer on your brain. The man who thinks fastest, goes farthest.

The only certainty is the present. Calculations based upon futures are gambles. Get the most out of every day. A lost hour is a lost chance. The whole world changes over night and so may your prospects.

Take your turn before the earth makes a new one. You can't hope to find conditions the same after they've circled the path of the universe. Do it now!

You're at the mercy of countless circumstances beyond your personal control. No individual can disconnect his projects from outside influences.

All plans are threatened by the unknown. The course of civilization was diverted in a pistol-flash at Sarajevo. A shot fired across any international border may kill a venture on the other side of the continent. Nothing is so sure as the unexpected. Finish while you can!

Nature proceeds with her arrangements without taking yours into account. Opportune moments are too rare to be wasted. Accidents, wars and the schemes of your rivals, aren't announced in advance.

Providence does not pursue a schedule, so you must. The odds are normally against you; don't increase them.

There are no reserved seats in the big show. Be on hand when the curtain rises—a hesitater never gets in the front row.

Procrastination is a thief with a dozen aliases, "caution," "conservatism," "deliberation," "wariness"—you, alone know the particular euphemism with which you excuse indecision. Call it what you will—unreliability by any other name is just as intolerable.

Act! You could win and lose, and win again, while you fuss and muss and hem and haw. Get through with it! Learn how you stand. Strike your balance and start a fresh account. Invest your strength and vitality—take your gain before they wane.

You're holding up the next deal. Common sense, self-defense and the rest of us demand that you bet your hand.

We will not wait for laggards. Minutes are too precious—they hold the profit and loss of the century.

Copyright, 1916, by Herbert Kaufman.

Commission Control and Manufacturing Monopoly

Theory that State Regulation of Public Utilities Necessarily Means Monopoly—Corollary to this in Telephone Business Is that the Monopoly Is Not Restricted to Utility Alone—Monopoly Extended to One Manufacturing Company!

By L. D. Kellogg

A great part of the country's telephone business, as well as other public utility business, is now under commission control. The commission usually has very broad powers and included among them is the power to grant monopolies. There is the provision that a competitive utility cannot start business without first obtaining from the state commission "a certificate of public convenience and necessity."

This naturally means that so long as the existing utility is giving service of a quality and at rates satisfactory to the commission, no competitor can enter the field. If the quality and rates are not satisfactory to the commission, the utility will make them so if demand is made upon it. The matter is taken up and thrashed out with the commission. As the commission means to be reasonable—and of course should be—and does not ask more than the company can stand, adjustments satisfactory to the commission are made in all cases.

There are, as a matter of fact, no new competing public utilities being started in the states where public utility commissions, with the power to grant certificates of public convenience and necessity, exist. The theory is that state regulation necessarily means monopoly in public utility business, and that theory at present is controlling in the legislatures of a great many of the states.

But in the telephone business as contrasted with all other business, a very remarkable corollary exists and one that it is believed has not been appreciated and realized in any degree, whatever, by the various legislative bodies, nor we think by the commissions themselves.

That corollary is that the commissions, under existing conditions, do not restrict their practical monopolies to public service utilities. What they actually do is to grant monopolies in over 50 per cent. of the cities and districts under their control to one telephone manufacturing company out of ten or more, and never grant a monopoly to a single one of the other nine or more manufacturing companies. Plainly the laws were never intended to operate, as they are operating, for the advantage of a single manufacturer who has not the remotest claim to be considered a public utility. This is a question that should be agitated in the various state legislatures and before the United States authorities so that the condition may be corrected.

The situation is briefly as follows: The American Telephone & Telegraph Co. owns the telephone companies giving the exclusive service to at least 50 per cent. of the subscribers in the United States. Under commission control these companies have practically unassailable local monopolies, as has been explained. The American Telephone & Telegraph Co. also owns the Western Electric Co., its manufacturing branch, and the purchases of telephone apparatus, switchboards, etc., by the Bell system telephone companies are, in practice, restricted to purchase from the Western Electric Co.

The Independent telephone operating companies also have their local telephone operating monopolies. These companies buy their telephones, switchboards, etc., in the open market and their business is placed on a strictly competitive basis, all the telephone manufacturers, including the Western Electric Co., sharing in this part of the business.

It is not the intention to answer what might be the Bell system's arguments to explain why they buy everything from the Western Electric Co., that the apparatus is better than any other, that uniformity and a standard are required for economy, that prices are not higher than others, etc.

These things are all beside the question. Every one of them may, for argument, be conceded and the situation is still unchanged in its unfairness for the reason that no opportunity to compete is given the Independent manufacturers.

If a concern is to receive monopolistic benefits because of its peculiarity that it furnishes a public service, it ought to restrict itself to the enjoyment of those benefits in its public service function and not use them for a purpose not intended by the legislative body that made the monopoly possible.

A monopoly granted for one purpose and used so as to result in a monopoly of a different sort, has been abused, and the whole monopoly ought to be withdrawn, until such time as the abuse is proven to have been abated.

More About the Western Electric Sample Telephones

Sample Sets Shipped on Trial Without Request for Them—Bill Rendered at Time of Shipment Under Assumption That Charge Is Satisfactory if not Repudiated in Ten Days—Letter Sent to Independents Following the Shipments

The Western Electric Co. is still sending Bell "sample" telephones to Independent operating companies in the hope of breaking in and getting an order. Some time ago, when TELEPHONY first called attention to this practice, certain Bell factory representatives were much grieved. They at first denied that any telephones were sent out unsolicited and declared that, in all cases, Independents had requested that a sample be shipped "on trial."

When convinced that this story would not hold water, they qualified it by saying that only "in a few cases" were Bell samples forced upon the Independent operators. It reminded one of the hired girl's excuse that, while the arrival of a fatherless baby was unfortunate, it ought to be overlooked as it was "only a little one."

TELEPHONY has received a letter from an Independent manager in a Western state, in which he says:

"Enclosed is a letter which is similar to the one recently referred to in TELEPHONY regarding the telephones the Western Electric Co. is shipping out on trial lately. Notice the supposition that the Western Electric Co. is our friend and chief adviser. This telephone was billed out to us when it was shipped and this letter states that they will

assume the charge to be satisfactory if they do not hear from us in ten days."

To show the "pussy foot" manner in which the Bell factory seeks entrance to Independent trade, the Western Electric letter to this Independent manager is appended:

Thirty days ago we sent you a sample of our new compact telephone. We shall be pleased to know if, in your opinion, our claims have been substantiated. This telephone costs very little more than any other on the market. Is it worth the difference?

Naturally, each manufacturer claims his telephone is the best. We realize that it is most difficult for any man not a telephone engineer, to know what claims are really true, since most telephones look, talk, and work well at first. Without years of actual test, to secure this information for yourself, you pretty nearly have to depend on the judgment of those in whose honesty and ability you have confidence.

We thank you for giving this telephone a trial and if we do not hear from you to the contrary, within ten days, we will assume that our charge is satisfactory.
and switchboards, but also of batteries, line construction and switchboards, but also of batteries, line construction material—in fact, practically everything you need. They are at your disposal.

Awaiting your demands, we are,

Yours truly,

—Sales Department.

Scattered among the storerooms of many Independent Telephone exchanges over the country are hundreds of Western Electric samples that the Bell interests are trying to force on operators. With no selling expense in furnishing the Bell companies their equipment, the Western Electric Co. can afford to spend money lavishly in an endeavor to break into the Independent field. This is one of the instances of unfair competition that the federal authorities should stop.

Telephone Directs Mammoth Preparedness Parade.

On Saturday, June 3, a mammoth parade in favor of preparedness took place in Chicago, over 130,000 people participating. In planning the parade those in charge recognized that the most modern military tactics had to prevail if the great concourse of people who it was expected would march, were to be handled with a minmum of confusion. It was therefore decided to adopt a telephone dispatching system with an army officer at its head.

In working out this plan, the Chicago Telephone Co. installed 18 telephone stations along the three-mile route over which the parade was to move. These stations were connected by direct lines to a private branch exchange equipment located in the Harrison exchange of the company. Four direct telephone lines were then extended to the parade headquarters in the Monadnock Block. Men accustomed to speaking clearly and receiving over the telephone, were stationed at each instrument. In addition a messenger was provided at each of the stations along the line of march. These messengers saw to it that all messages received over the telephone were delivered to the proper persons.

On the walls of the office in which Captain Raymond Sheldon, U. S. A., the parade dispatcher was located, hung three large maps of Chicago. Strips of colored cardboard, held in place by pins with heads of the same color, represented the division of the procession. An inch of cardboard meant 1,000 persons. Red, black and green strips grouped in Grant Park on the map indicated that 70,000 persons were waiting in the morning for the boom of the cannon that was to set them moving. A long line of pink pinned to Wabash Avenue showed 10,000 girls ready to join in the parade.

Just before 9 o'clock the parade marshal communicated with Captain Sheldon, stating that his aids reported the head division in readiness to move. Captain Sheldon's assistants had also reported likewise, and the order was given to move. From that time until 8 o'clock in the evening, the guidance of the marching rested almost solely with Captain Sheldon. The conversations in Captain Sheldon's office ran something like this:

Telephone operator: "Twelve reports the parade passing at rate of 45 ranks a minute."

Captain Sheldon: "Make it 30 ranks."

Telephone operator: "Hides and leather passing No. 16."

Captain Sheldon: "Slow them down."

Telephone operator: "No. 16 says they are marching slow."

Captain Sheldon: "Tell them to march slower. The parade has been making 75 yards a minute. I want it to move 60 yards a minute. That's the schedule."

Telephone operator: "Board of trade not ready."

Captain Sheldon: "Call No. 6 and tell them to throw the board of trade in after millinery."

And so it went all day, the parade being kept up to the schedule and even time cut from it.

One of the features of the parade was the appearance of some 3,000 telephone operators who were loudly applauded along the entire line of march. The long distance operators were arranged so as to form an immense American flag, there being an alternating row of girls with red capes and caps and girls with white capes and caps, while 48 girls with blue capes and blue caps with a white star on top formed the stars of the flag. Words cannot in any measure convey the beautiful sight presented.

Discuss Grievances of Texas Traveling Men.

At the request of the telephone committee of the United Commercial Travelers of Texas, a committee composed of R. B. Still, E. C. Blomeyer and E. M. Powell, representing the Texas Independent Telephone Association, met with the travelers in Dallas, Texas, on May 8, for the purpose of discussing the grievances of the traveling men of Texas against the telephone companies of the state. Similar meetings will be held with the Travelers' Protective Association of Texas, and the Texas Travelers' Association.

The traveling men of Texas are protesting against certain changes in rates that became effective in the state late in 1914 on the lines of the Southwestern Telegraph & Telephone Co. and of some Independent companies. The principal protest is against the abolition of the reduced night rate. The travelers claim that the elimination of the night rate works a personal hardship on them, taking away from them the privilege of talking to their families over the long distance lines at a reasonable cost.

It has been proposed by the representatives of the travelers' organizations that a night rate beginning at 8 p. m., be inaugurated, and that the reduced rates apply also to Sunday messages. This plan, they claim, will remove the objections of rush of business conversations held over until after 6 p. m. on the old night rate scheme, and will leave the lines clear for social conversations. Further meetings will be held between them and the telephone people, no agreement having been reached at the first conference.

The travelers are also negotiating with the Southwestern company, and, unless some mutually satisfactory agreement can be made before the end of this year, they expect to find relief through the 1917 legislature.

To Enlarge Winfield (Kan.) Plant.

The Missouri & Kansas (Bell) Telephone Co. is making arrangements to enlarge its plant in Winfield, Kan. Nearly $18,000 will be spent on extensions to the outside plant, replacement work and central office equipment.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—Part I, Telephone Economics, by James H. Shoemaker, Completed June 26, 1915—Part II, The Corporate Telephone Organization, by J. C. Kelsey and S. R. Edwards, Completed September 25, 1915—Part III, Telephone Accounting and Auditing, by James H. Shoemaker, Completed January 15, 1916—Part IV, Telephone Finance, by J. C. Kelsey and S. R. Edwards, Completed June 3, 1916—Installments Now Being Presented Comprise Part V, Telephone Advertising and Publicity, Written by Roy D. Mock

[EDITOR'S INTRODUCTION: In the "Fundamental Principles of the Telephone Business," four distinct subjects have been covered, the concluding installment of Part IV, "Telephone Finance," having appeared in last week's issue. Part V of the "Fundamental Principles of the Telephone Business," which begins in this issue, embraces a topic which telephone companies during the last year or so have had brought to their attention. It is that of "Advertising and Publicity." It is generally acknowledged that telephone companies can accomplish many purposes through the proper and efficient utilization of advertising and publicity.

It is the purpose, in presenting Part V, "Telephone Advertising and Publicity," to TELEPHONY'S readers, to point out the purposes of advertising and the methods and devices used. The fundamental principles to be observed in developing advertisements, and the selection of advertising mediums, will be discussed. The mediums to be used for the attainment of certain purposes will be considered in detail. Through the presentation of the articles on advertising, it is expected that telephone companies will be enabled so to plan their advertising as to produce the best results.

In the matter of publicity for telephone companies, the various devices which have been used and proved successful will be detailed. The advantages and disadvantages of exhibits at fairs and shows of various kinds, the use of moving pictures, delivering of lectures, and the publication of reading notices in newspapers will be set forth clearly and concisely.

It is the purpose, in fact, to consider every phase of advertising and publicity which concerns or may be utilized by operating companies. TELEPHONY believes the logical presentation of advertising principles will be of general benefit.

The preparation of Part V, "Telephone Advertising and Publicity," has been undertaken by Roy D. Mock, senior member of the firm of Mock & Hardy, advertising counselors. Mr. Mock has had an extensive experience in advertising and publicity work from many different standpoints and gained an intimate understanding of telephone conditions through a previous association with one of the telephone journals. This experience has been supplemented by a close study and analysis of advertising problems in numerous other lines. In the opinion of TELEPHONY'S editors, Mr. Mock is well qualified to discuss this important subject.]

CHAPTER I. The Definitions and General Purposes of Advertising.

1. *Advertising a Form of Salesmanship.*—What is advertising? There are almost as many definitions of advertising as there are people to discuss the subject.

Some look upon advertising in a very broad way as embodying any selling effort that may be made. Others take a more sane and conservative view and look upon advertising simply as salesmanship on paper—an attempt to mold or sway public opinion or sentiment so that what we have to offer will be approved above what the other fellow has to offer.

Reputation is an advertisement—so are newspaper advertisements, booklets, circulars, letters, honesty, courtesy and politeness. What people say about you is also an advertisement—either good or bad.

2. *Newspaper and Merit Advertising.*—Most people recognize the newspaper advertisement as a form of advertising. Many, however, would not be so willing to admit that the ordinary business virtues of courtesy, thoroughness, promptness, etc., constitute advertising. And yet these commoner business virtues are the most essential forms of advertising. They are really the basis of advertising.

The printed advertisement must have something to say, and about the only thing you can have to talk about is some unusual merit in regard to your service—some point of difference between your service and that offered by competing companies.

Merit is undoubtedly the best advertisement. Merit is a forceful piece of advertising but mighty slow in its action. You must tell people! If the inventor of the telephone had kept the purpose and construction of his device entirely concealed from outside view, there is no disputing the fact that it would have had just as much merit then as now—only nobody would have known anything about it, and the telephone would not, today, be the universal necessity that it is.

3. *Telling Constitutes Advertising.*—People were told about the telephone. Its advantages were pressed home to them so that finally the belief in these advantages became a part of the public make-up, and they came to consider the telephone as a vital factor in social and commercial life.

The Chinese knew about gunpowder centuries before its invention in Europe. If they had told the rest of the world about this wonderful invention, they might, today, have been the center of manufacturing and inventive art. But they kept silent. To sell a thing you must tell people about it. This telling constitutes advertising.

It has been said that the patent office is cluttered up with devices which would have made their inventors wealthy, if the public had been told about them. But the inventors invented and patented, patented and invented, and ignored the great public until the big opportunity had passed. Then it was too late.

4. *What Telephone Companies Should Advertise.*—Occasionally a telephone man will say: "I don't have to advertise because everybody knows about my company."

Suppose this statement were entirely true—that everybody does know about your company. But do they know *everything* about your company? Their minds may be so completely filled up with some of the bad things they know about your company, that they ignore the good things. Tell them what you would like to have them know.

If you believe that everybody knows about your company, and therefore that advertising is unnecessary in your case, just remember the man who was with one exception the most widely-advertised man in the United States for several years—President Cleveland's second vice-president. By the way, what was his name? His advertising stopped and people stopped remembering him.

If you have "tried advertising, but couldn't make it pay," just remember what John Wanamaker said about advertising—that advertising does not jerk, it pulls. Perhaps there was a time when a man could put an advertisement in the paper one day and roll in wealth the next, but that time is certainly past now.

Advertising gathers momentum as it goes. An express train does not start at the rate of 60 miles an hour. It starts at ½ mile an hour and gradually works up to its full speed. That is the way advertising works. The tenth advertisement you run will be more effective than the first, and the hundredth advertisement will be more productive than the tenth, because it has the cumulative effect of all others that have gone before.

5. *Conditions Determine Telephone Advertising.*—But the questions you are considering are these: "Should a telephone company advertise? If so, under what conditions?"

A telephone company has but one thing to sell—viz., telephone service. To sell, it must tell. In this day of modern business it is not enough merely to allow a business to take its course. To do this invites the inroads of aggressive competition. Even a telephone company that apparently has no competition should advertise for the sake of controlling public sentiment, so that more favorable franchises can be put through and more advantageous contracts made with the city or municipality it is serving.

If you have aggressive competition, your most potent weapon is advertising. If you want to increase your rates, the best way is to go before the public by means of advertising and tell frankly why you must have more money. If you want a more favorable arrangement with the city council, the best way is to tell the people about it and their influence will make itself felt in your favor.

6. *Relation of Public to the Telephone Structure.*—Compare your entire telephone business with the telephone instrument setting on the desk in front of you. Let the broad base of the instrument represent the financial interests which support the system as the base supports the instrument. Let the standard represent the plant equipment maintained by the capital. Look upon the receiver as the commercial department—the medium through which the outside public keeps in touch with *you* by sending in its contracts, making its complaints and paying its bills.

Then the mouthpiece will be your method of advertising to the public—of talking to the public. What you say through this mouthpiece will have a large bearing upon what the public says and does to you.

Look upon advertising, then, as a vital factor in your business. Consider it as the transmitter through which you talk to the public. Look upon it not as a necessary evil—something to be done just because it seems to be customary—but as an opportunity to tell people what you would like to say to them.

7. *The Opportunity Advertising Offers.*—Suppose all the good people of your community were gathered together in some auditorium. You would certainly welcome the opportunity to talk to them for five minutes, yourself—or to have someone talk for you—and tell them the things you would like to have them know about the service problems you are attempting to work out. You would declare that here, at last, was the chance you had been waiting for—an opportunity to talk to the people and to tell them the things that are in your mind right now.

This is exactly the opportunity that advertising is offering you—a chance to go direct to the people and talk to them. You can neglect this opportunity if you choose. If you do, you will perhaps wonder later why contracts are not coming in as fast as you desire and why public sentiment seems somewhat opposed to you. Or you can transform this chance into a living opportunity to make your business a bigger, more profitable one—one capable of serving the community better and of making more money for you.

Advertising is telling.

(*To be continued.*)

Additions to Telephone Building in Omaha.

The Nebraska Telephone Co. is planning the addition of four floors to its four-story building on Douglas street, Omaha, Neb., and an extension southward 60 feet to the alley. The extension to the south will be eight stories in height to conform with the rest of the building, which will have an eight-story frontage on Douglas street. The new addition will be used exclusively for office purposes and will cost about $200,000.

Increased Facilities Necessary in Pottstown, Pa.

Owing to the rapid growth of its business in Pottstown, Pa., the United Telephone & Telegraph Co., of Harrisburg, Pa., has found it necessary to increase its cable and switchboard facilities. Arrangements are now being made for the stringing of 15,000 additional feet of cable and increasing the capacity of the switchboard in Pottstown, involving an expenditure of about $10,000.

Roadside Telephone System Established in Indiana

Installation of Roadside Telephone System by Indianapolis Telephone Co. for Strauss Service System—Motorists Having Keys to the Telephone Boxes May Call for Assistance in Case of Trouble or Obtain Connection with Local Subscribers

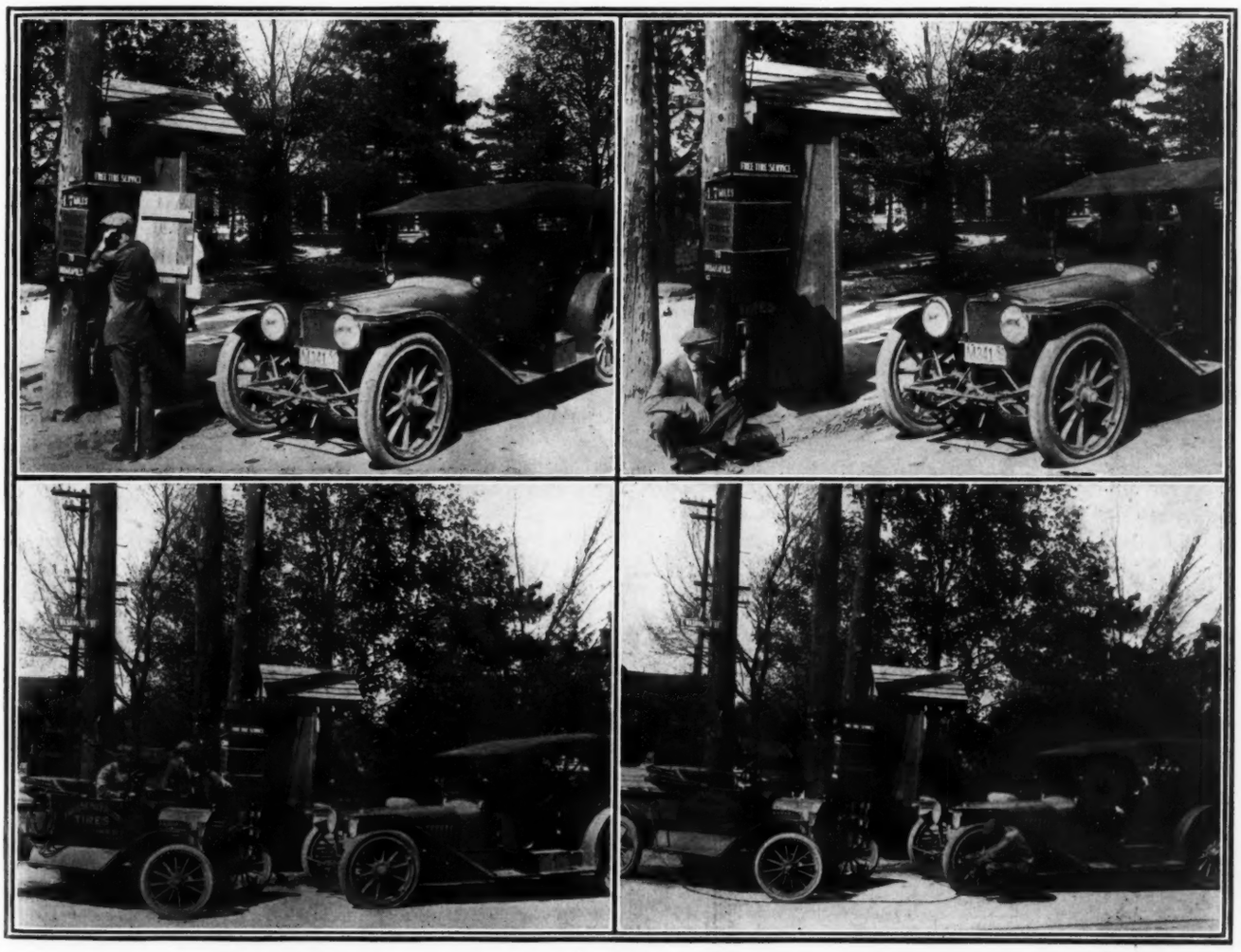
The Indianapolis Telephone Co., of Indianapolis, Ind., has just completed the installation of a roadside telephone system in Marion county, which consists of over 200 telephones attached to telephone poles on the main roads in Marion county, outside of Indianapolis. This system has been established by the Strauss Service System—an automobile tire sales and service company of Indianapolis—for the purpose of affording a means to the motorist of calling for assistance when in trouble.

The Strauss company has from eight to ten automobiles manned by tire experts to answer summons at any hour, from the roadside telephones. The services of the tire experts are free. The motorist, of course, must pay for casings, tubes or repair materials used. No charge, however, is made if he has the requisite materials needed to restore the tire to a serviceable condition.

Clem Strauss, president of the Strass Service System has placed a rental charge of $2 per year on each key given out in order to insure the keys being in responsible hands. Free and unlimited service may then be obtained to the offices of the Strauss system from any of the roadside telephone boxes. As all of the telephone stations are numbered, it is only necessary for the motorist to give the number of the box from which he is telephoning, in calling for assistance.

No doubt many telephone companies will be interested to know how an arrangement can be made with a tire company for such service. The Strauss Service Company furnished to the telephone company, without cost, the boxes which contain the telephones. The telephone company will use its existing farmer lines in order to attach these telephones, which will eliminate any additional expense on the part of the company except the cost of the instruments and their installation on telephone poles. The telephone company is to receive the regular farmer line rental. Inasmuch as this is a one-way service, the rural lines will not be disturbed with additional ringing on the line.

Direct connection may be obtained with the exchange of the Indianapolis Telephone Co., from which connection for a city call may be obtained. Long distance calls can also be placed from these roadside telephones, provided that the calling party make himself known to the long distance operator or the message be reversed to the party called. This service is said to be the most complete of its kind in the United States and telephone owners in Marion county are rapidly securing keys for these telephones.



A Series of Views Showing What Occurred When a Motorist Had a Case of Tire Trouble—Trouble Cleared in 20 Minutes.

Up to the present time the tire company has sold more than 1,000 keys. The boxes in which the instruments are located are painted in black and yellow. On each box also appears the number of miles to Indianapolis. There is a telephone located at a distance of not farther than one mile and in many places one-half mile apart. The motorists at all times will be within a quarter to one-half mile from the roadside telephone.

The Roadside Telephone.

The Strauss Service System was recently announced in the Indianapolis newspapers in an advertisement occupying a space 4½ inches in width and 11 inches in height. The roadside telephone service was also featured in a full page advertisement on the inside back cover of the latest Indianapolis telephone directory, in which the accompanying view of the roadside telephone box was used to illustrate the announcement.

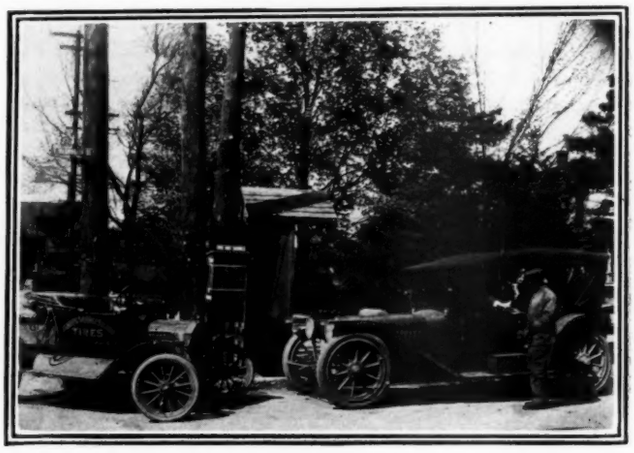
As shown in the accompanying series of views, Clem Strauss, president of the Strauss Service System, recently had a case of tire trouble and called for assistance at station 140, a distance of three miles from the office of the Strauss company, through the Indianapolis exchange. The repairs were made in 20 minutes' time.

In addition to being of invaluable assistance to the motorist, this roadside telephone system will afford the telephone company a means of increasing its local business.

To Hold Monthly Wire Chiefs' Meetings in Nebraska.

The Lincoln Telephone & Telegraph Co., of Lincoln, Neb., has inaugurated a series of monthly wire chiefs' conferences. The meetings will be held at various points in the company's territory, no advance notice being given the wire chief at whose exchange the meeting is to be held. Upon getting together at one of these meetings the wire chiefs inspect the plant of their host with a critical eye, complimenting him on conditions which strike them as contributing unusually to the efficiency of the plant and calling attention to improvements which they think might be made.

The first meeting of the series was held the latter part of May at Superior. It was attended by some 35 wire chiefs, who desired to hold their initial meeting there in honor of C. H. Jensen, the oldest wire chief in the state. In a body the wire chiefs went over the Superior installation with a fine-tooth comb. The plant was found in excellent condition, only one criticism being made; namely, that exposed electric light wires were discovered too close to the telephone wires, thus endangering life should the lighting wires come in contact with the telephone wires.



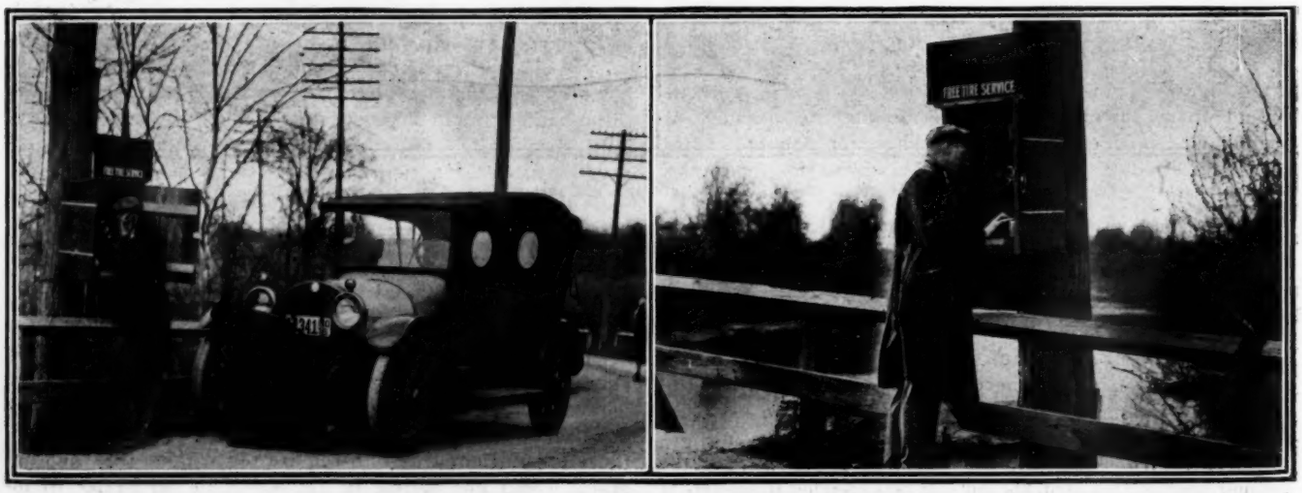
Paying the Repairman for Materials Used.

The trial meeting at Superior was very successful and other gatherings will follow in regular order.

Chesapeake & Potomac Incorporates in West Virginia.

The Chesapeake & Potomac Telephone Co. of West Virginia was recently incorporated under the laws of West Virginia with a capital stock of $7,500,000. The new company was organized to bring under a domestic charter the local Bell companies throughout the state of West Virginia. The incorporators are:

F. H. Bethell, Scarsdale, N. Y.; H. F. Thurber, Brooklyn, N. Y.; M. H. Buehler, Baltimore, Md.; G. W. Artz, New York City, and W. T. Williamson, Charleston, W. Va.



Roadside Telephones, Connected with the Exchange of the Indianapolis Telephone Co., Are Located so as to be Easily Accessible.

Factors to be Considered in Furnishing Good Local Service

Well Designed and Arranged Switchboard and Competent, Well-Informed Operating Force Essential Requisites to Efficient Local Service—Points to be Taken into Consideration in Purchasing Central Office Equipment—Training and Supervising the Operators

By J. A. Harrison

In recent years much has been said and done to arouse the interest of telephone companies in the correct handling of long distance traffic. This educational work has resulted in wonderful improvements. The only thing that caused us to finally become interested, was the fact that we could see the direct benefit in dollars and cents. Comparatively nothing has been said, however, concerning local traffic, although to the average telephone company the benefit derived from good local service is of far greater value.

Good local service requires a well designed and arranged switchboard and a competent, well-informed operating force. The former is of more importance than the average person realizes. In principle there is no difference between building a house and building a switchboard.

When planning the building of a house, absolutely the first consideration is the number of rooms that will be required based on the number of persons that will occupy it. Next would come the arrangement of these rooms as a whole and then the arrangement of individual rooms. The main thought would be to utilize all space and eliminate the possibility of any unnecessary steps being required of the occupants. For example, it would be a poor plan to locate the kitchen at one end of the house and the dining room at the other end. The last thing that is considered is the material used in its construction.

Studying Traffic Conditions Before Purchasing Board.

Usually when a telephone company decides to purchase a switchboard the directors call in their equipment men and decide on the materials that are to be used, but give very little thought to the quantity or its arrangement. The question of materials to be used is important, but there are other points of equal value. A switchboard should enable the telephone company to give a rapid, accurate, reliable and economical service. To accomplish the desired result requires that the quantity and arrangement of the switchboard be based on the volume and character of the traffic.

Before attempting to prepare a specification covering the proposed switchboard, complete traffic records should be compiled for all hours of the day and for different seasons of the year. Great care should be exercised in obtaining these figures to insure their accuracy. These records should form the basis for determining the number of switchboard positions, number of lines per position, number of information, trouble, chief operator's, etc., desks and positions.

From them should also be determined the number of trunks needed between the main switchboard and the special desks. The operator loads and trunk loads should be equalized or made to balance with the amount of traffic to be handled. Traffic loads are based on the total amount of time required to get full information from or for the subscriber, perform the necessary labor to establish the connection and the total time the equipment is in use. To many this may appear to be unnecessary labor and expense but when it is considered that probably ten times the amount paid for the switchboard will be expended to operate it during its life, the importance of a thorough study of traffic conditions is realized.

Many things that appear trivial in the arrangement of the equipment really have a serious effect upon the operator's work and the service as a whole. A fair example of this is the indiscriminate use of an order wire to the set of an "A" operator or an operator who is actively engaged in answering subscribers' calls. In general, every part of the apparatus should be marked in some way to indicate its use. This can be done with number plates, designation strips or engraving.

Relying Upon Operator's Memory.

It should not be necessary for the operator to rely on her memory for anything. It is true that many operators memorize or have a mental picture of all the apparatus with which they work—and it is beneficial—but the switchboard should be so marked that an entirely new set of operators could go on duty any time and handle the traffic. This principle holds true all the way through. The telephone company which permits its service to be handled on the memory basis will, nine times out of ten, give poor service; and in addition, is at the mercy of its operating force.

When investigating the functions of the various switchboards, the main idea should be to consider what it will do for your own office and not what it appears to have done for some other office. The reason for this statement is that frequently a little common sense instruction to an operating force will overcome the difficulty that apparently required complicated switchboard circuits.

The telephone habits of the subscribers enter largely into what special circuits should be installed. For example, if the subscribers have been trained to hang up for a few seconds after completing one call before attempting another—and from the telephone company's standpoint that is a good habit—then cord flashing signals, cutting cords dead, etc., are hardly justified. This holds true if the operators have been properly instructed as to what signals take precedence.

After a full investigation as to the traffic conditions, the subscribers' habits, growth in lines and stations of each class and a decision reached based on this investigation, a complete specification should be prepared and submitted to the manufacturers. This specification should, of course, not only specifically state the quantity of equipment, its arrangement and functions, but also the quality of each part of it. When this is done the manufacturers know exactly what to bid on and all will be bidding on the same equipments.

Special Desks or Apparatus.

The same consideration should be given special desks or apparatus as is given the main switchboard. For example, to place in service ten trunks to one information operator position is not good practice, although it is often done. A moment's thought will convince any one that if there is sufficient traffic to require ten trunks, then one operator could not handle it. It would be far better to in-

stall only the number of trunks to give the operator a load and report all lines to "Information," busy, than to connect the subscriber and then require him to wait several minutes for an answer.

It should be borne in mind that operators' loads, trunk loads, etc., are based on certain conditions. If these conditions do not exist, then an effort should be made to remedy the conditions instead of making the switchboard fit the conditions. It is a mistake to order equipment based on standard loads and practice and expect an inferior operating force to handle the traffic satisfactorily. Both the equipment and operating force must be right to give good service and neither one will run itself.

Importance of Educating the Operating Force.

A great many operating forces are not developed to a very high state of efficiency. The local operating force is capable of being a tremendous asset or a heavy liability to a telephone company. As to which it shall be, depends entirely on the officials of the company. Through the local operating force the company can educate the public to the proper use of the telephone, and this is a bigger question than appears on the surface. If more attention is paid to it, the expression "The subscribers are unreasonable" will not be heard as often as it is today.

The work of the local operating force is confined to executing the orders received from the subscribers, but its influence can go far beyond the mere obeying of orders. This influence will create a good, bad, or no impression at all on the subscribers, depending upon the way they are met by the operator. If the same number of people as comprise the local operating force were to be sent out by the telephone company to meet the subscribers face to face, probably greater care would be exercised in selecting them, explaining their work and the reason for doing or saying certain things, than is ordinarily given to the local operating force. A local operator can obey every rule, to the letter, that was ever laid down for her guidance and still give unsatisfactory service.

Phrases to be used by the operators should be given careful consideration before being adopted, but when once adopted should be used by each and every operator at all times. Every phrase should be positive and convey definite information. For example, when reporting a line busy various expressions are used such as "Busy," "They are busy," "That line is busy," etc., but the only one that conveys the definite information that the line called for is in use is the one, "That line is busy."

Repeating of Numbers by the Operators.

Most operators regard the repeating of numbers as being done to simply indicate that she has correctly understood the subscriber. As a matter of fact when it is done in the proper way, it not only questions the subscriber to verify the fact that she has correctly understood it but it conveys the impression that her whole attention and effort is being directed to completing that particular call. It also serves to concentrate the operator's attention on the number and its location.

It is thought by many that the expression "Number, please?" is the proper one for the operator to use when answering a line signal. However, it does not work out in practice half so well as it does in theory. It is hard for the operator to get the right inflection and in her endeavor to overcome the difficulty, she will either get too sharp a tone or she will slur or drag the words. The result is the subscriber thinks the operator is either irritable or half asleep. All the subscriber wants to know is that the operator is ready to take his order and execute it. The operator's voice, and not the phrase, should contain not only the "please" but the desire, willingness and readiness to serve the subscriber to the best of her ability.

It has been a constant source of surprise to find so many operators and chief operators who do not know why a cord signal should be given precedence over a line signal or on a common battery board why they should not ask the calling party if the called number had answered.

The speed of answer to line signals has been discussed so much that apparently all other steps have been lost to sight. That should be about the last consideration. Supervision and tests only of the answer to line signals are worthless, insofar as judging the service in the average office. Accuracy and reliability are the main questions in rendering good service. Speed without control is worth no more in an operator's work than it is in the work of a baseball pitcher.

In many cases the important position of directing the work of the traffic forces is left entirely in the hands of the chief operator. She may have been selected on account of being the oldest operator in point of service or that she possessed exceptional ability as an operator. She has probably never been employed by any other company nor had any general business training. Her ideas of serving the public are, therefore, confined to what her predecessors did or what she has learned in that particular office. She does the very best she can but she is handicapped from the very start. More attention is now being given to the employment of operators than formerly, but that is a big subject by itself and will not be discussed here.

Patience and eternal vigilance are required to give good telephone service. Too often the subscriber is the one that is required to exercise patience. No group of people—and that includes telephone operators—will each understand the first time a thing that is told them or the why of it. It requires many repetitions and explanations. Telephone service can and is being given that goes a step farther than satisfaction—it arouses enthusiasm, and until that condition is reached the telephone company is not receiving the full value from its traffic department.

The result would surprise many telephone officials if the operators were instructed in the broader principles of meeting the public in the right way. It is reasonable to assume that where two groups of persons, such as operators and subscribers, are continually meeting, a splendid opportunity is presented for one group or the other to take the lead. If the operating force has the knowledge and ability and the proper tools to work with, it will lead. If the operators do not possess these qualifications, they may still be in front but they will be driven—they will not lead.

It is contended by many that the telephone business is purely a local matter. This being true, then it is high time to devote more attention to serving the local community. We who are in the business, speak of renting telephones at so much per month. That is a good expression for us to use, but it is not true. We sell service and the telephone instrument is only a part of the delivery system. We talk rental and the subscriber talks service. The spirit of the progressive merchant today is to improve the quality of his wares and to make every sale result in a little more than satisfaction to the customer. He knows that such a customer is his best advertisement. The telephone company wants, should and can have the same kind of customers.

Chicago Telephone Co. Reports Large Gain in Telephones.

Since the first of the year, the Chicago Telephone Co. reports a gain of 40,000 telephones in Chicago and suburban territories, making a total of 540,000 telephones in operation. This includes an increase of 15,000 in the city alone.

Annual Reports and Meetings of Telephone Companies

Statements Issued by Telephone Companies in Various Parts of the Country Relative to Their Operations During the Past Year—Earnings and Surplus Accounts Show Companies to Be in Excellent Financial Condition—Election of Officers

Michigan State Company Issues Annual Report.

The annual report of the Michigan State Telephone Co., Detroit, Mich., for the year ended December 31, 1915, shows net operating revenues of $1,694,515, an increase of $561,814 over the previous year. The earnings and expense accounts compare with those of the preceding year as follows:

	1915.	1914.
Operating revenue	$6,429,687	$5,953,885
Operating expenses	4,735,172	4,821,184
Net operating revenue	$1,694,515	$1,132,701
Taxes and uncollectables	414,584	366,296
Operating income	$1,279,931	$ 766,405
Other income	53,046	42,454
Total income	$1,332,977	$ 808,859
Interest, rentals, etc.	671,490	652,758
Balance for dividends	$ 661,487	$ 156,101
Dividend appropriations	240,000	.....
Other appropriations	65,000	1,682
Surplus	$ 356,487	$ 154,419

The balance sheet, as of December 31, 1915, shows working assets of $1,255,230, as against $1,187,828 last year; total working liabilities $505,793, against $316,385, and total assets and liabilities of $27,771,760, as compared with $27,221,844 last year.

Annual Report of Bluefield (W. Va.) Telephone Co.

The Bluefield Telephone Co., of Bluefield, W. Va., reports gross earnings of $111,767 for the year ended December 31, 1915. The expenses, including $71,190 operating expense, totaled $77,919, leaving net revenues of $33,848. Adding miscellaneous non-operating revenues and deducting interest expense, leaves a net income of $30,164. Of this amount $12,120 was paid out in dividends, leaving an undivided surplus of $18,044. The revenue and expense accounts follow:

Exchange service revenues	$74,496	
Toll service revenues	36,689	
Miscellaneous operating revenues	582	
Gross telephone revenues		$111,767
Traffic expenses	16,418	
Commercial expenses	7,361	
General and miscellaneous expenses	10,954	
Current maintenance	36,457	
Total operating expenses	71,190	
Uncollected operating revenues	600	
Taxes	3,638	
Rent reductions	1,729	
Amortization of landed capital	762	
Total other telephone expenses	6,729	
Total telephone expenses		77,919
Net telephone revenues		33,848
Net other revenues		100
Total gross income		33,948
Deduct interest expense		3,784
Total net income		30,164
Dividends		12,120
Balance—undivided profits		18,044

The per station figures based on the Interstate Commerce Commission's system of accounts for November and December and the yearly average for the year ended December 31, 1915, follow:

TELEPHONE EXPENSES PER STATION.

	Nov.	Dec.	Year Ended Dec. 31, 1915, (Yearly Average.)
Exchange service revenues	$1.88	$1.89	$20.77
Toll service revenues	.95	1.01	10.72
Miscellaneous operating rent revenues	.....	.....	.20
Gross telephone revenues	2.83	2.90	32.69

TELEPHONE REVENUES PER STATION.

Traffic	.42	.41	4.81
Commercial	.23	.20	2.15
General and miscellaneous	.31	.27	3.20
Current maintenance	.92	.94	10.65
Total operating expenses	1.88	1.82	20.81
Other telephone expenses	.37	.16	1.96
Total telephone expenses	2.25	1.98	22.77
Net telephone revenues	.58	.92	9.92

The balance sheet of the Bluefield Telephone Co., as of December 31, 1915, is given below:

ASSETS.

Right of way	$ 16,098	
Land and buildings	26,355	
Central office equipment	29,943	
Station equipment	42,890	
Exchange lines	143,298	
Toll lines	58,662	
Total plant in service		$317,246
General equipment (furniture, tools, vehicles, etc.)	7,445	
Investment securities	648	
Total permanent and long term investments		8,094
Cash and deposits	181	
Accounts receivable	13,752	
Materials and supplies	8,601	
Total working assets		22,534
Prepayments	1,853	
Total deferred debit items		1,853
Total assets		349,727

LIABILITIES.

Capital stock, common (authorized)	202,500	
Funded debt	50,000	
Total capital liabilities		252,500
Bills payable	6,000	
Accounts payable	11,387	
Total working liabilities		17,388
Accrued liabilities not due	104	
Total deferred credit items		104
Reserve for accrued depreciation	56,392	
Reserve for amortization of intangible capital	2,342	
Total fixed capital reserves		58,734
Corporate surplus unappropriated		21,002
Total liabilities		349,727

Central District Telephone Co. Issues Annual Report.

The Central District Telephone Co., of Pittsburgh, Pa., reports gross earnings for the year ended December 31, 1915, of $6,949,495. Deducting $5,215,877 operating expenses leaves net earnings of $1,733,618. Interest charges amounted to $511,244 and dividends $1,050,000, leaving a surplus of $172,374 for the year, an increase of $163,083 over the preceding year. The comparative statement of earnings and expenses follows:

	1915.	1914.
Gross earnings	$ 6,949,495	$ 6,673,126
Operating expenses, taxes, etc.	5,215,877	5,131,023
Net earnings	$ 1,733,618	$ 1,542,103
Interest	511,244	482,812
Balance	$ 1,222,374	$ 1,059,291
Dividends	1,050,000	1,050,000
Surplus	$ 172,374	$ 9,291

The balance sheet as of December 31, 1915, follows:

ASSETS.

	1915.	1914.
Real estate	$ 2,758,075	$ 2,055,367
Telephone plant	20,127,696	19,895,497
Construction in progress	381,187	
Furniture, fixtures and supplies	445,668	364,141
Cash and deposits	377,611	386,865
Bills and accounts receivable	5,602,305	7,410,187
Stocks and bonds	1,084,376	9,176
Prepaid expenses	70,694	62,774
Other assets	537,215	448,229
Total	$31,384,827	$30,632,236

LIABILITIES.

Capital stock	$15,000,000	$15,000,000
Funded debt	9,950,000	9,950,000
Accounts payable	355,869	298,276
Accrued liabilities	537,606	538,717
Employes' benefit fund	255,000	255,000
Reserve for replacements	3,951,497	3,428,279
Other reserves	9,798	9,281
Surplus	1,825,057	1,152,683
Total	$31,384,827	$30,632,236

Keystone Monthly Statement of Earnings.

The Keystone Telephone Co., of Philadelphia, Pa., has issued its statement of earnings for the combined companies for the month ended April 30, 1916, and the four months ended on that date:

	For Month Ended		For Four Months Ended	
	April 30, 1916	Year Previous	April 30,1916	Year Previous
Gross earnings	$120,326	$112,666	$474,166	$443,729
Operating expenses and taxes	58,394	55,109	236,350	221,502
Net earnings	61,932	57,557	237,816	222,227
Less interest charges	27,453	26,495	109,812	105,608
Net surplus	$ 34,479	$ 31,062	$128,004	$116,619

Report of Rushville (Ind.) Co-operative Company.

The annual report of the Rushville Co-operative Telephone Co., Rushville, Ind., for the year ended March 31, 1916, shows gross earnings of $35,620, an increase of $1,401 over the preceding year. This includes $27,128 exchange revenue, $6,916 toll revenue and $1,576 miscellaneous revenue. The receipts for the year, including the balance April 1, 1915, totaled $36,187. The total disbursements, including $17,572 operating expenses, were $35,951, leaving a balance on hand, April 1, 1916, of $236.

During the year just ended the company has decreased its indebtedness from $31,500 to $19,000. On April 1, 1915, it had in service 1,600 telephones and on April 1, 1916, it had 1,749 telephones, making a net gain for the year of 149 telephones.

Annual Report of Rochester (N. Y.) Telephone Co.

The Rochester Telephone Co., of Rochester, N. Y., reports gross earnings for the year ended December 31, 1915, of $496,808; operating expenses, $326,298, leaving a net operating income of $170,510. Deducting $54,530 bond interest, leaves $115,980 net earnings. Of this amount $58,852 was set aside for depreciation, leaving a surplus of $57,128.

Officers for the ensuing year have been elected as follows: President, George R. Fuller; vice-president, George F. Roth; secretary, Fred C. Goodwin; treasurer, William T. Farrell. The executive committee is composed of George R. Fuller, George F. Roth, Peter Vay, J. Foster Warner, Fred C. Goodwin, Fred W. Zoller and H. H. Littell.

Report of Cumberland Telephone & Telegraph Co. for 1915.

The Cumberland Telephone & Telegraph Co., of Atlanta, Ga., reports operating revenues for the year ended December 31, 1915, of $7,880,374, a decrease of $168,178 from the previous year. Deducting the operating expenses and taxes which amounted to $5,833,647, left a net operating income of $2,046,727, an increase of $245,992. Adding non-operating revenues to the amount of $133,940 and deducting $1,300,089 miscellaneous charges, leaves a surplus of $880,578, an increase of $195,375. Dividends paid during the year amounted to $644,809. After paying miscellaneous deductions to the amount of $102,096, the balance, $113,673, was credited to the surplus account, an increase of $244,057 over the preceding year.

Report of Southwestern Company of Texas.

The gross earnings of the Southwestern Telegraph & Telephone Co., of Dallas, Texas, for the year ended December 31, 1915, were $9,048,173. The total expenses were $6,830,236, leaving net earnings of $2,217,937. The statement of revenues and expenses follows:

INCOME.

Exchange service—rental of telephones	$5,062,660
Toll service	3,369,046
Miscellaneous	616,467
Total revenue	$9,048,173

EXPENSES.

Operation	$4,005,706
Maintenance	2,442,427
Miscellaneous, including interest on loans	382,103
Total	$6,830,236
Net earnings	$2,217,937

The balance sheet of the company, as of December 31, 1915, follows:

ASSETS.

Property:	
Exchange lines, equipment, apparatus, etc.	$29,315,339
Real estate (book value)	1,873,608
Furniture, supplies, etc.	611,194
Accounts receivable and cash	1,016,304
Bills recivable	2,323,901
Stocks, etc.	11,593,004
Total	$46,733,350

LIABILITIES.

Capital stock	$35,000,000
Floating indebtedness, with interest at 6 per cent.	6,186.500
Current accounts due	603,973
Accrued liability, not due	47.345
Funded debt (bonds)	989,000
Employes' benefit fund	150,000
Deferred credits	13,076
Reserves and surplus	3.743.456
Total	$46,733,350

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

392. What is stated to be the most satisfactory and reliable method for analyzing a circuit?

393. Should drawings be depended upon entirely in basing a decision as to the operation of a circuit?

394. What conditions should be observed and taken into consideration in making a circuit analysis?

395. Cite an instance of a definite relation that must be provided for in the arrangement of equipment.

396. What is the first step in the examination of a common battery line circuit?

397. State a point which is of great practical importance in circuit analysis. What method is suggested in following out a circuit?

398. What parts of a circuit need not be traced and why?

399. Why should circuits of various kinds be analyzed?

400. What should first be determined in the actual analysis of a circuit?

401. Upon what assumption is the second step in circuit analysis based?

CHAPTER XVIII. Circuit Analysis (Continued).

402. *Separation of a circuit into parts.*—In studying any circuit, there are successive stages of operation which it is necessary to fix in mind before proceeding further. In the more complex circuits the writer has found it almost essential to make sketches of a part of the circuit, drawing into the sketches, as they are made, the changes introduced into the conditions by the various stages of operation. This phase of circuit analysis is illustrated in the very simple illustration used, by the operation of the line relay, *A*, Fig. 138.

It is necessary to make a mental note of the fact that the line relay has operated; that nothing else has happened; and that the local contacts of the line relay are held in the operated position by the line relay armature. Mentally noting that this is so, all wires starting from the non-grounded terminal of the battery, are traced in a second check of the circuit to uncover any unexpected conditions created.

This will, of course, show that operating current is now being admitted to the line lamp and that it will continue to flow until the line relay is released. In other words, the examination of the line circuit has shown that it will be free from any operating conditions until the calling subscriber removes his receiver. When the receiver is removed, it will instantly operate as it is intended to do and will cause the lamp signal to be displayed before the operator.

403. *Identical method necessary in more complex circuit arrangements.*—The illustration used, the operation of the line circuit in Fig. 138 to the point of displaying the signal at the switchboard, is so simple as to permit of a complete analysis upon the most casual inspection. In more complex circuit arrangements, however, it is necessary to proceed according to the method outlined in the illustration. In the

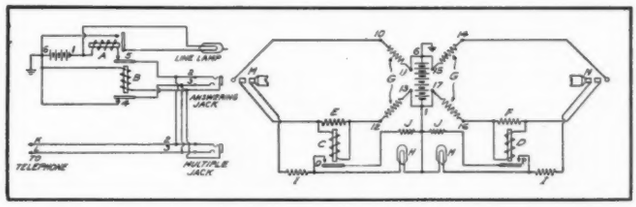


Fig. 138. Three-Wire Repeating Battery Feed Cord Circuit.

first place, assume that the conditions obtaining are normal; that is, that no service is being rendered by the circuit. Under these conditions trace each wire involved, starting from the non-grounded terminal of the common battery, to make sure that no part of the equipment is either wholly or in part in the condition in which it should be in when service is *being rendered.*

After all possible paths for current flow have been checked assume the set of connections involved in the demand for service and again check each wire involved, in exactly the same way. Make a mental note or actual sketch of each stage in the operation of the circuit and proceed from each stage as a new starting point, checking all of the wires in each instance to make sure that no improper operating conditions are created as the equipment responds to the demands upon it. Carry this procedure through all the stages of operation of the circuit until the normal condition is again reached in which further operation is a mere repetition.

404. *Danger of incomplete analysis.*—It is evident that the analysis of the line circuit in Fig. 138 is not yet complete as new conditions are sure to be introduced by the insertion of the answering plug into the line jack. In fact it is not possible to make an analysis of any line circuit without at the same time analyzing the cord circuit with which it is to be used. Inasmuch as the operation of this type of line and cord circuit has been briefly explained (TELEPHONY's Home Study Course for Telephone Men, sections 354 to 361, inclusive), other types of common battery line and cord circuits will be analyzed as further illustrations of the general method.

405. *Marginal conditions of operation.*—The operation of telephone switchboard apparatus must be, above all other considerations, reliable. That is to say, whenever the condition

under which the device is designed to operate, occurs, it must operate promptly and in the manner intended. In the example of circuit analysis given, all the elements of the line circuit operated positively. When the condition calling for their operation occurred, they were sure to respond and to produce the desired results. A relay, however, that does not operate when its winding is carrying 0.01 ampere but which is intended to operate when the current in its winding has been increased to 0.1 ampere, would be known as a relay designed for *marginal* operation—that is, the operation of the relay would be subject to a margin in the strength of current carried in its winding.

In general, it is desirable to utilize as few marginal features as possible to accomplish any given object. Relays are preferably designed to operate solely when current is sent into their windings and to resume their normal condition when the operating current is withdrawn. Operating conditions, in ordinary cases, are made independent of a *change* in current strength. They are rather dependent upon the entire interruption or start of flow of the exciting current. In case marginal conditions of operation are necessary, they should be most carefully scrutinized in order that their margins of operation be made as wide as possible.

406. *Examples of marginal operation.*—Marginal conditions of operation are much more widely used in automatic and semi-automatic equipment than in manual equipment. There are, however, many instances of marginal conditions of operation in manual equipment giving perfectly satisfactory results. An illustration is found in the repeating coil type of battery feed cord circuit illustrated in Fig. 138. Here the supervisory lamps, *H*, are arranged for marginal operation. When the current through them is not reduced, owing to a part flowing through the shunt resistances, *J*, the lamps glow. When the current through them has been reduced by the effect of the shunts, they cease to glow or, at least, become so very dim that they may be said to be entirely dark.

The operating current which caused them to glow initially is not *interrupted* to cause the darkening, but is merely *reduced*. In other words, the *margin* on which the operation of these supervisory lamps depends, is the margin between the strength of current through them with and without the shunt, *J*, in circuit. This margin is amply wide enough to afford the most satisfactory results in the operation of the lamps.

Another marginal condition that affords satisfactory results in practice, is found in the operation of the busy test in the same kind of circuit (Fig. 138). Here the difference of potential between the tip of the testing plug and the sleeve of the busy jack varies over a considerable margin without in the least interfering with the satisfactory operation of the busy test.

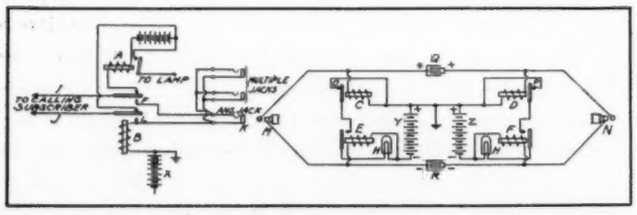


Fig. 143. Two-Wire Multiple and Two-Wire Cord Circuit.

407. *Operation in part under marginal conditions.*—It is obvious that positive conditions of operation are to be preferred to marginal conditions in every case where they are feasible. There are many arrangements in use, however, that depend in part upon the operation of equipment under marginal conditions. In making an analysis of any circuit where such arrangements are encountered, they must be given most careful consideration. It must be ascertained beyond doubt that they will be operative, not only under the conditions for which they were designed, but also under any possible conditions that may be imposed upon them by incidental circuit conditions and which are more severe.

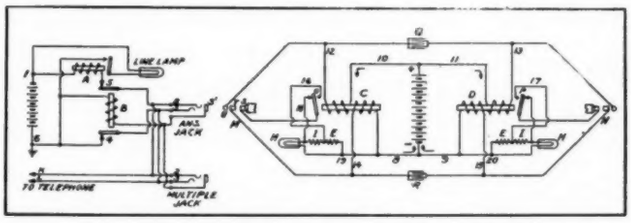


Fig. 147. Common Battery Circuit with Double-Wound Supervisory Relays.

In Fig. 147 is shown a form of common battery switchboard circuit suitable for use in multiple switchboards and actually in operation in several exchanges. It will be noted at once that the line circuit part of this is identical with the one used in both Fig. 138 and Fig. 143, so far as the arrangement of the items of equipment is concerned. It will be found, however, that when it is used with the cord circuit shown in Fig. 147, the resistances of the relay windings are fixed at different values from those used in the others. The operator's ringing and listening keys are omitted from the drawing, as usual, for the sake of clearness.

The supervisory relays, *C* and *D*, are each wound with two coils of wire. It will be noted that these two windings on each relay are connected so that the current passing through each of them creates magnetic polarity in the iron core in the same direction. It is also to be noted that each relay interposes one winding between the common battery and each side of the cord circuit.

Since the two windings on each relay are alike, it follows that the impedance between each side of each end of the cord circuit and the common battery is the same. This should be compared with the arrangement shown in Fig. 143. In the circuit shown in Fig. 143, the balanced impedance between each side of each end of the telephone circuit and the common battery is obtained by designing the windings of the cut-off relay, *B*, and the sleeve relays, *E* and *F*, so that their *combined* impedance as used, is equal to that of the supervisory relays, *C* and *D*. (*To be Continued.*)

Telephone Company Opens Camping Ground for Employes.

The Fayette Home Telephone Co., of Lexington, Ky., has opened its clubhouse and camping grounds at Ford, Ky., for the summer season. The first outing of the year was held on May 20 and a number of automobiles were required to transfer the employes, about 70 in number, to the ground where supper was served. The company a short time ago secured a lease on the camping grounds and a large farm house which has been turned over to an outing club composed of employes of the company who will operate it in the summer.

Thomas A. Combs, president of the company, and Martin Taylor, the manager, were in attendance at the opening.

Queries on Theory and Practice

An Accounting Problem.

A telephone company had in service for seven years an instrument valued at $12 new. It was replaced by a new one and a farmer bought the second-hand instrument for $8. How is this shown on the books?

Advice from the accounting department of the Interstate Commerce Commission on this problem is as follows:

"If the price realized from the sale of plant is in excess of the original cost, less the depreciation, such excess should be credited to surplus. From the facts presented it is assumed that the particular unit stands charged to the plant account at $12; that $7.75 is carried in the depreciation reserve; and that the unit was sold for $8. If such is the case, the excess of $3.75 should be carried to surplus."

This reply is based on a life of 12 years for the set so that its value less depreciation is $4.25. Selling the set at a price of $8, the company received $3.75 in excess over its value on the plant account.

Commercial Limit of Transmission.

What is the commercial limit in damp weather of a No. 9 iron grounded telephone line suspended from trees on split tree insulators?

The commercial limit varies greatly. We cannot give an exact answer because even in damp weather the insulation is not any certain figure, but may be one value in one place and a different value somewhere else.

As a general result from practical observation, we should not care to place much reliance upon such a line for more than 25 or 30 miles. It may be you could not talk that far under extreme conditions and you might talk farther. Split tree insulators are poor devices for insulating a telephone line. There is no dry surface and the leakage path is very short. Avoid them so far as possible.

Making Metallic and Number of Parties on Lines.

In a rural district, many miles from any power supply, ten wires are strung. It is proposed to make five metallic circuits and thus obtain two metallic phantoms, and possibly one grounded phantom over the fifth pair. Would one-half-mile transpositions staggered on each metallic circuit with two-mile transpositions of the physical be all right, in view of the possibility of transmission lines (and other telephone lines at present) passing at some future date?

The total length of the present lines is about 10 miles. These

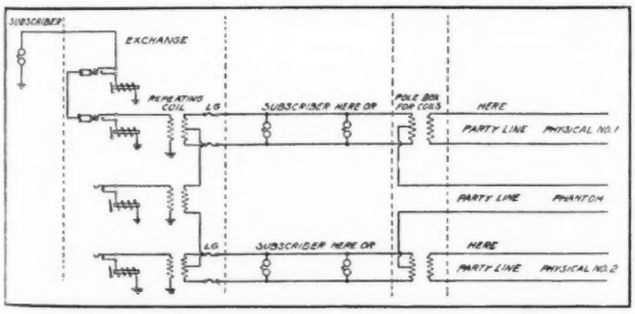


Fig. 1. Plan of Circuits and Exchange Connections.

run to a central office to which ground return lines terminate and must be interconnected, as shown in Fig. 1.

In straight metallic using No. 8 iron, what is the greatest number of local battery instrumetns that can be used efficiently without nearing overloading?

It is better to use the scheme of Fig. 2, as this has been worked out completely to take care of all the circuits on one cross arm and on a second arm as well. Make each section, as from 1 to 2, or 2 to 3, about 1,300 feet, or a quarter of a mile, calling the home end of the line 0. From 0 to 1 will be 1,300 feet also. Start out to make these transpositions and repeat until you have used up your ten miles of line.

Overloading is of two kinds, resulting in inability to ring bells, and in its ability to give service. As a rule, you can

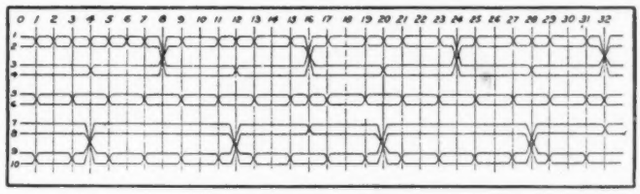


Fig. 2. Transposition Scheme.

ring many more bells than will permit good service. We have known of lines having 20 telephones, each equipped with a ½ mf. condenser in the receiver circuit. Ringing on this line was fair, but the service was very bad, because so many people wanted to use the line at once. What constitutes good service and what constitutes overloading as regards service, depend very much on the people. If the subscribers are willing to put up with it, having ten or twelve parties on a line is all right. In general, we advise strongly against putting on more than eight or ten parties.

If the repeating coils in your phantom arrangement (Fig. 1) are good ones, and you keep your lines in good shape, you can ring through up to ten or twelve telephones with good satisfaction.

An Intermittent Trouble.

In our magneto switchboard, each cord circuit is equipped with double ring-off drops and condensers and four-cord circuits have repeating coils for use with long distance calls. All of our lines are grounded or one-wire lines, except four or five which are metallic. Lately we have been troubled with a case of cross talk between four or five of our lines, among them being one metallic line. It comes and goes in just a few minutes and so far we have not been able to find the cause for it. Would be much obliged to anyone who can tell me where to find the trouble or the cause for it through Queries on Theory and Practice.

Your trouble may be due to a bad joint in the ground wire of your switchboard, or perhaps to a metal chip or speck of dust in the main distributing frame or some part of the switchboard.

Some one will have to camp down on this come-and-go trouble and when the case comes on, disconnect some circuit and test quickly before it clears up. Such cases often baffle the best telephone man for quite a while, because they do not stay long enough to be located by test.

Series Arc Circuit and Grounded Lines.

We have a very bad light noise on our grounded lines since a street series system of lighting has been used. With the old system of lighting we had no noise. The noise is now so bad when the lights are on that we cannot use any of our grounded lines. We have gone over the lighting circuit three times and cannot find any place closer than 2½ or 3 feet to our lines.

Series arc light circuits always cause trouble like this, because the return part of the electric light line is too far away to be of any use in neutralizing the induction.

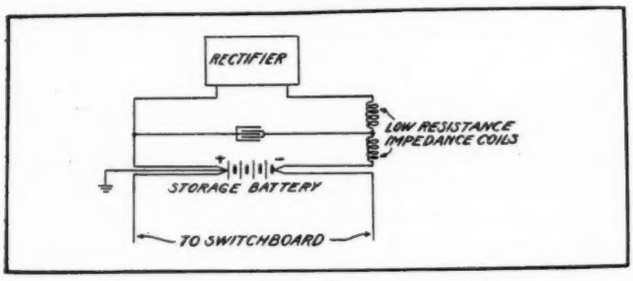
If the lead and return of a lighting circuit run close together, one partly neutralizes the other, so that the induction is mild. But if the wire goes down one street and up another, they are

so separated that the telephone wires which parallel it, get the full effect of the induction.

Your only remedy is to metallic your lines, unless you can keep at least 150 feet away. Making the lines metallic is the best remedy.

Charging Storage Batteries From Lighting Circuit.

I am charging storage batteries from a 110-volt lighting circuit using a step-down transformer and electrolytic rectifier. I use the battery for the switchboard transmitters, but



Charging Storage Batteries Using Rectifier.

find it necessary to throw the transmitter off while charging, owing to the noisy impulses of the pulsating current in the receiver. Is there any possible way to get around this trouble and use the battery and charge at the same time?

The charging wires must be led to the battery itself, independent of the discharge leads. Fasten them onto the lead terminal strip of the battery as indicated in the accompanying sketch, not even using the same bolt (if bolts are used) and burning the charging wire on separately, if lead-burned connections are used.

The object is to have the resistance from joint to joint through the battery as low as possible. It is well also to keep the charging wires separate from the discharge wires, to avoid electromagnetic induction. Do not let them lie close together. If even these two measures fail, you might need to use the two low resistance impedance coils as shown in the diagram and increase the capacitance of the condenser until you get it quiet enough.

Cross Ringing on a Grounded System.

I have a magneto exchange of about 200 subscribers, mostly on grounded lines. Bells ring at subscribers' stations when the operator is not calling them. The lines are

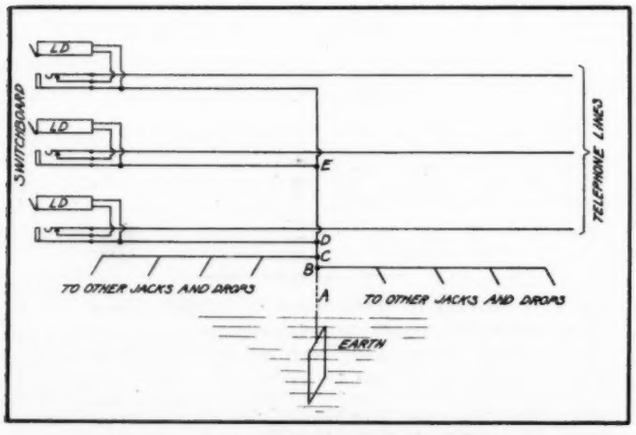


Diagram of Grounded Exchange Conditions.

not crossed and test clear through cable. A bell in the east part of town will ring when ringing a party in the west end. Two or more drops on board are frequently thrown when we ring on certain lines. One line leaves the terminal pole and goes east and the other west. I have examined the drop wire down to the pole terminal and find no trouble there. No high tension wires are near, and apparently there is no cross anywhere. We get a lot of sneak rings. Have 25 or 30 cases of that kind.

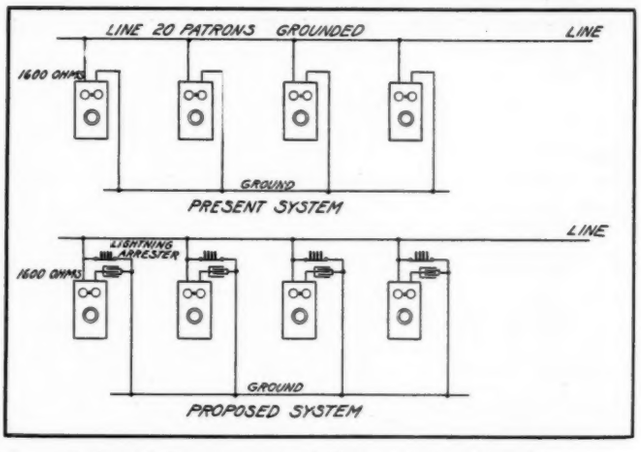
Look carefully after your common ground at the switchboard. You will need to make it a good low resistance connection to moist earth to prevent this kind of trouble. Solder all connections in this earth wire and take nothing for granted; make sure of its excellence.

The low resistance must extend from the earth itself, through the contact surface of the earth plate, the conducting wire and all its branches, up to the individual branches to lines, as shown in the accompanying diagram. Use about No. 10 B. & S. gage copper wire, *A*, from plate to board and solder thoroughly every joint, such as *B*, *C*, etc. The joint to each separate drop, as *D*, *E*, etc., should be soldered also, but high resistance as these *D*, *E*, etc., will not cause cross ringing.

The earth plate should be of copper, about two feet square and deep enough to be in moist ground the year around. If your earth connection is dry, or you suspect that it is, pour several pailfuls of water on it, and after it has soaked, try for cross ringing again.

Use of Condensers on Grounded Systems.

Please advise if an arrangement like the one shown in the sketch can be successfully used. My plan is to cut a condenser in between the telephone and the ground, thus



Proposed Arrangement of Sets on Grounded Line.

showing a clear line for a voltmeter test when conditions are normal. If so, where can the condensers be bought, and of what capacity?

What is the best and most practical book on telephone condensers and their application to telephone work?

Your plan is one which has been proposed before and possesses merit. It was used for years by a toll company in Nebraska on its copper metallic toll lines, and it worked very well. Our recollection is that the chief trouble is the breaking down of the condensers by lightning, but this should not be troublesome, as modern condensers are much better made than they were years ago. Any reputable telephone manufacturer (as our advertisers) can supply condensers tested to 500 volts, and, if required, can sell you those which stand 1,000 volts. Use 2mf. capacity, as that will allow good ringing and talking.

McMeen & Miller's "Telephony" has a good condenser talk in chapter 12, pages 168-175. It is a book which every telephone man should have. "The Capacity and Phase Difference of Paraffined Paper Condensers," Reprint No. 166, Bulletin, United States Bureau of Standards, is very technical.

Practical Subjects—Letters and Discussions

Getting An Early Start.

The photograph reproduced below was taken in the new office and exchange building of the Washington Telephone Co., of Washington, Iowa, when Miss T. Anne Barnes, traveling chief operator of the Iowa Independent Telephone Association was recently conducting a school of

The Manager and Operators of the Washington Telephone Co.

instruction in that city. The children seated before the miniature switchboard used by Miss Barnes in her work of instructing the operators in local and long distance operating methods are: Master Charles D. Mannhardt, son of D. W. Mannhardt, manager of the Washington Telephone Co., the little Misses Mabel Trevillyan, Evelyn Mae Reister and Helen C. Larrabee.

With this early start, the Misses Trevillyan, Reister and Larrabee and Master Mannhardt will undoubtedly be actively engaged in telephone work long ere most children at their age begin to have any thoughts of their life work. While the attention of Miss Trevillyan was momentarily diverted by the photographer, upon putting up her connections, the other two young ladies are most intent upon their work. Young "Manager" Mannhardt has put in a call, the connection for which we judge is being put up by Miss Larrabee.

"Telephony's" Home Course for Telephone Men.

(Not meant for study.)

By Well Clay.

Sank the summer sun with splendor
  Into seas of flaming red;
Pillared clouds rimmed 'round with silver,
  Motionless, hung overhead.

Ceased the wind its faintest whisper;
  Died the wavelet on the strand;
Any eye could see that listed;
  Only God could understand.

Rose the silent moon and silvered
  All the world with mellow light;
Softly sighed the vagrant zephyr,
  Like a fragrant breath from night.

Who can number all the ages,
  Who can guess the future span
Sun and moon have hung in Heaven
  Or shall light the feet of man?

The thing that makes for beauty in Nature as much as anything, is harmony. And without harmony, which is but another name for "Co-operation," there can be no great beauty in anything. Nothing that is inharmonious is beautiful and therefore is not right.

Harmony in Nature gives the same results as harmony in business affairs or family matters, and if we were all wise—that is to say, wise enough to see some of the simplest truths which Nature is perpetually endeavoring to bring to our notice by giving daily examples—we should see our way clear to success in our personal relations by merely correcting or eliminating that which is inharmonious. Success in any line is never obtained except through the proper marshalling of pertinent facts and the rightful application of them in their logical sequence.

In St. Paul, Minn., last week passed away one of the most successful men this country has ever produced—James J. Hill, the builder of an empire, to give him due credit. His achievements lie in the promotion and operation of great lines of railways which he builded through the once virgin wilderness of the great Northwest.

The strongest feature of the success of Mr. Hill is said to have been his habit, when about to promote or put into operation something he deemed desirable to first go out and gather all the facts pertaining to the matter in hand. Then, when he had his facts at hand, he would carefully go over the situation, relegating each fact to its logical place in the scheme. And he was extremely careful to get the proper focus on each fact so that he would not contribute to the failure of the proposition by having facts of doubtful proportions or in the wrong place.

He arranged them, as it were, in the same manner a musician arranges notes—with half notes, quarter notes or bars and rests, in the right place so when the piece is played it results in harmony and therefore in success. Simple isn't it? Yet that very habit raised the man who acquired it from being comparatively poor at 41 years of age and in 35 years set him at the head of thousands of miles of railways, of steamship lines, coal and iron mines, great farms and immense banking institutions, besides making him a master of both men and millions.

It is said that the proper application of harmonious sounds through a long enough interval of time will shake to earth the strongest structure of masonry. There is the legend, with which most of us are familiar, about the poor fiddler, who, to revenge a slight put upon him by a city in ancient times, sat himself down beneath the keystone of a massive stone bridge, that connected the city which was built on both sides of the river. Then he tuned his beloved instrument to just the proper pitch, fiddled away in the same strain until the structure collapsed over his head. It gave him not only a glorious revenge, but a funeral for himself.

If all the telephone men who are in the game on the Independent side could by some means get into complete harmony among themselves as to thought and action and, when properly tuned, would play the little ditty entitled "Independents Buy Only From Independent Manufacturers," I am sure that a certain structure which now rears its menacing bulk across the telephonic stream, trying to span both sides, would soon tremble.

I have just come from one of the largest co-operative picnics that it has ever been my good fortune to attend. Five big co-operative companies having their home in this territory, joined in with our local co-operative association, the Union Club—a sort of commercial club or board of trade—and the result was a tremendous success.

The rural business man—sometimes alluded to with or

without the prefixed adjective, as "a farmer"—met with the city business man and through comparison of notes and exchanges of experiences, each were brought to see that the problems with which both had to contend were, after all, a good deal alike. If the farmer forgot half the facts necessary to remember to insure success, he failed either partially or wholly. The merchant, when told of this peculiar circumstance, by his rural friend, found that it tallied with his experiences exactly.

Being brought thus to a common level by the mutual interchange of ideas and experiences as it were, the farmer probably began to comprehend how it was that the merchant really needed a fair profit in order that he might live and prosper. The merchant, perhaps, saw for the first time why it was a somewhat hazardous occupation, financially speaking, to try to make land worth $150 an acre, raise enough to pay interest, taxes, and a reasonable profit with which to purchase automobiles and gold bricks.

The governor of the state was there and also a number of other candidates for office to whom the promise of support at the polls did not arouse evident signs of displeasure.

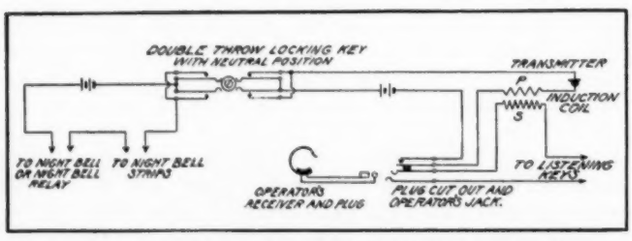
Through all the thousands there congregated, passed at pleasure—unchallenged and unhindered, in apparent perfect composure—telephone men known to all, who, but a few short years ago, raised a whirlwind of protest, through the ill-advised action of raising telephone rentals to a point which gave some promise of a margin of profit, in case the management was what it should be. There were none to cast reproach upon them and it is doubtful if any of those, who at one time had been so anxious to bring defeat to the telephone company, ever thought of the matter at all while they chatted pleasantly together with the men against whom they had been pitted in the past.

Keep in tune and co-operate even if you are only a 32nd note.

Method of Economizing on Dry Cells.

Many of the smaller companies have discarded the Bluestone or gravity cell for switchboard transmitter work and are using the ordinary dry battery. Usually three cells are placed in series with a high resistance transmitter and a battery cutout in each listening key, and one in the operator's plug jack. All listening keys are intended to be closed and the operator's receiver plug withdrawn when the board is not in use.

This arrangement is very useful, but will admit of improvement. The following plan is submitted to those who desire to cut the cost of battery maintenance to a minimum: The main object in the circuit illustrated is to provide a means to prevent the operator from forgetting to open



Circuit for Saving Battery on Switchboard Transmitter.

the transmitter circuit at night when the board is not in use.

This is accomplished, as shown in the sketch by using a double throw switch. The act of putting the night bell in circuit opens up the transmitter and battery circuit. Thus it is impossible for the operator to forget. The rest during the night period gives the cells a chance to recuperate, thus lengthening their life.

If the switch installed has a neutral point, it will serve as a transmitter cutout for day service which is very desirable.

Clay City, Ind. Frank L. Whitaker.

District Meeting Held in Joplin, Mo.

District meetings and operators' schools are being held in all parts of the state of Missouri by W. W. Johnson, secretary of the Missouri Telephone Association. Mr. Johnson has

Operators from 27 Towns Attended the Joplin District Meeting.

had a broad experience in traffic as well as other branches of the telephone business and it is believed that much good is being accomplished by this work.

The meeting held at Joplin, Mo., on May 9 and 10, was very well attended, as may be seen by reference to the accompanying reproduction of the photograph taken at the meeting. Operators were present from 27 towns in the vicinity of Joplin. The feature of this meeting was the discussion of operating practices, conducted by W. S. Vivian, of Chicago, secretary-treasurer of the United States Independent Telephone Association. He was assisted in this work by Robert Burns, traffic superintendent of the Home Telephone Co., of Joplin.

The entertainment features of the meeting were provided by the Joplin Home company (one of the Gary properties), assisted by Mr. Johnson.

More than 50 operators and telephone owners attended the convention and operators' meeting held at Tipton, Mo., on May 25. A. J. Shands, superintendent of exchanges for the Kinloch Long Distance Telephone Co. of St. Louis, had charge of the operators' meeting and in general discussed toll and local operating methods. The telephone situation in general was discussed by the owners and male employes of the telephone exchanges in that vicinity.

This is the sixth of these meetings that have been held within the last 60 days by the Missouri Telephone Association. A number of such meetings are being arranged for at the present time which will be held in the central and eastern part of the state.

Final Conference on National Electric Safety Code.

The final conference on the National Electric Safety Code was held by the United States Bureau of Standards on May 29 and 30 in Hotel La Salle, Chicago. About 30 conferences have been held at various times in different parts of the country to discuss the provisions of this code with representatives of state commissions, municipalities, utilities and other interested parties. The final draft of the code will now be formulated and it is expected that it will be published some time during the summer.

L. E. Hurtz, of Lincoln, Neb., representing the United States Independent Telephone Association, asked that No. 12 galvanized steel wire be permitted for use in railroad crossings in arid territory where corrosion is not serious. This precipitated quite a discussion. W. C. Polk, also rep-

resenting the national Independent telephone association, stated that No. 14 wire of this type had been in use for years in Kansas without deterioration. Representatives of steam railroads claimed that such construction would not be safe, that the iron wire formerly used resisted corrosion better than the steel wire which is now supplied and that the railroads had discarded the use of such wire.

Work of Traffic Committee of United States Association.

The traffic committee of the United States Independent Telephone Association has for several months been engaged in the work of compiling a book of operating rules that will be adaptable and acceptable for use by all Independent telephone companies throughout the United States. In the parts where dual connections have been established it has been necessary for the operator to learn both the Independent and Bell operating methods. It has been the purpose of the committee to eliminate as many of these differences as possible, and to that end several meetings have been held and much work done to eliminate these differences.

About a year ago the Ohio State Telephone Co. published the most comprehensive set of long distance operating instruction ever issued in the Independent field. These rules were adopted by some of the associations and are now in general use in the states of Pennsylvania, New York, Michigan, Indiana and Ohio. Considering that these rules were in use in such a large territory and that a great deal of work of an expert character had been performed in their publication, it was thought advisable by the traffic committee of the United States association to use them as a basis for any rules published.

The committee has made a detailed comparison of differences between the Ohio State Telephone Co.'s practice and the rules of the Bell company. These differences have been tabulated and forwarded to many of the larger Independent companies with a request for their opinions as to which method would be most advantageous to their company's interests. The replies received from the various companies were carefully considered and a question of differences in operating practices were discussed and the great majority of differences eliminated. Such differences as may continue in these books will be only of a minor character. The work as between operators will be almost absolutely uniform.

A sub-committee consisting of F. V. Newman, W. S. Vivian and T. J. Tune was appointed to compare the rules for submission to the service committee of the association. The work is being pushed along rapidly and will be ready to be presented to the service committee within a very short time. The committee is also busy in preparing a series of bulletins pertaining to a number of traffic matters. These have been assigned to members of the committee as follows:

"Route Book," H. E. Davis; "Operator's Lessons," Q. E. Elwell; "Questions and Answers for Students," taken from the operating rules, F. V. Newman; "Peg Counts, Specifications and Observation Forms for Local and Long Distance Work," G. K. Gann; "Common Battery Operating Rules," W. I. Howard; "Magneto Operating Rules," C. E. Doolittle, and "Uniform Toll Ticket," W. S. Vivian.

Many of these bulletins will be submitted to the traffic committee at its next meeting, which will be held on or about June 23 and 24, at Columbus, Ohio, where the committee will meet at the invitation of the Ohio State Telephone Co.

The committee extends the invitation to all telephone men who are interested in traffic matters to attend any or all of its conferences.

The photograph reproduced on this page was taken at a meeting of the traffic committee, held in Chicago on May 5 and 6. Reading from left to right the men in the top row are: George K. Gann, general traffic superintendent of the Lincoln Telephone & Telegraph Co., Lincoln, Neb.; Q. E. Elwell, traffic superintendent of the Ohio State Telephone Co., Columbus, Ohio; W. S. Vivian, secretary-treasurer, United States Independent Telephone Association, Chicago, and T. J. Tune, traffic engineer, Ohio State Telephone Co., Columbus, Ohio.

Some of the Members of Traffic Committee of the United States Independent Telephone Association.

Those in the front row, from left to right: H. E. Davis, general traffic superintendent, Kansas City Home Telephone Co., Kansas City, Mo.; F. V. Newman, secretary-treasurer, Michigan Independent Telephone & Traffic Association, Grand Rapids, Mich.; W. I. Howard, traffic superintendent, Tri-State Telephone & Telegraph Co., St. Paul, Minn., and C. E. Doolittle, traffic superintendent, Citizens Independent Telephone Co., Terre Haute, Ind.

The following are also members of this committee, but were unable to be present at the meeting held early in May: C. C. Deering, secretary of the Iowa Independent

Telephone Association, Des Moines, Iowa; E. D. Glandon, president of the Illinois Independent Telephone Association, Pittsfield, Ill.; W. N. McAnge, Jr., secretary of the Southern States Independent Telephone Association, Corinth, Miss.; C. S. Norton, secretary of the Indianapolis Telephone Co., Indianapolis, Ind., and A. J. Shands, traffic superintendent of the Kinloch Telephone Co., St. Louis, Mo.

Preliminary Report on Central Home Efficiency Contest.

"We have found that the really hard part of the battle for 100 per cent. collections and for the getting of new business is making the start," said W. M. Brown, general auditor of the Central Home Telephone & Telegraph Co., at Louisville, in recently discussing the course of the efficiency campaign this year. "If we can once get a plant going at a 100 per cent. efficiency clip, we can keep it there," he said.

Coming from Mr. Brown, whose company has a record of almost perfect commercial efficiency extending over several years, this point is of particular importance. Speaking of the work that is being accomplished this year, Mr. Brown noted that the campaign for the first half year ending June 30, is picking up speed every day and the indications on May 30, were that many of the plants of the Central Home company will finish the first half year without an uncollected balance on their books and that all of them will have collected money enough to equal 100 per cent. or more of their charge.

"Every telephone manager," Mr. Brown went on to say, "knows that he should watch the collections all the time and that he should increase his subscription list and his revenue as he goes along, and yet the average efficient manager is sometimes inclined to neglect these very things.

Several years ago this company inaugurated a policy of awarding a cash prize for the attainment of the high mark set by it for collections and for the getting of new business as of June 30, and December 31, every year. This plan has been very successful, indeed, and it has not only brought the collections up to a high standard, but it has been the means of increasing the subscription lists very materially.

There is nothing which stimulates men and women to their best efforts like rivalry and with this in mind we keep going a steady fire of circular letters to all managers, either written or edited by the general auditor of the Central Home company. At this time there is not a day passes which does not bring a letter from some manager or district manager hurling a defy at his opponents and cheering his co-workers to better efforts.

The old idea that a collecting campaign necessarily involves the removal of a great many telephones is long since exploded. The plants in our system which make the best record for collecting, invariably show a healthy increase in their subscription lists. Moreover, the good work done in the commercial department is always reflected in the other departments, as it is not possible to collect 100 per cent. and to get new business without furnishing good service—which requires up-to-the-minute plant and operating department.

In offering a cash prize for the accomplishing of specific results, the amount of cash in the prize need not be large, for it is the spirit of rivalry—first between the districts and next between the individual organizations which really counts. A manager or a district manager, if he is worth his salt, is not going to sit still and let the other managers or districts 'put it all over him' and shove him down to the foot of the class; that is, not if hard work will prevent it. And after all has been said and done, hard work is all there is to it."

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies, Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Hearing on Purchases Postponed to June 20.

Announcement has been made by the Interstate Commerce Commission that the hearing on Section 10 of the Clayton anti-trust act, scheduled to be held before the Interstate commission at Washington, D. C., on June 19, has been postponed to June 20, at 10:30 a. m. This is the hearing relating to purchases of common carriers which was originally set for May 16.

Temporary Rate Increase at Joplin, Mo., Made Permanent.

The Missouri Public Service Commission, on June 5, handed down its opinion and order in Case 600, the city of Joplin vs. the Home Telephone Co. of Joplin, making permanent a temporary increase in rates which was put into effect February 1, 1915.

For a number of years prior to 1913 there were two competing telephone exchanges in Joplin, one owned and operated by the Joplin Home Telephone Co., and the other by the Missouri & Kansas (Bell) Telephone Co. The Joplin Home company charged $2.50 per month for business telephones and $2 per month for residence telephones, while the Missouri & Kansas charged $2 per month for business telephones and $1.50 per month for residence telephones. The Joplin Home then had about 3,270 telephones and the Missouri & Kansas about 2,500. There are now 5,560 subscribers in the present exchange.

During the year, 1913, the Joplin Home Telephone Co. purchased the Missouri & Kansas Telephone Co.'s exchanges in Joplin, and consolidated the two plants. The commission, in authorizing the consolidation, stipulated that the rates of the consolidated exchanges should not be increased prior to January 1, 1915. Before that date a new schedule was filed with the public service commission making changes as follows:

	Rate per month. From	To
Direct line business rate	$2.50	$3.50
Four-party line business rate	2.00	3.00
Four-party line residence rate	1.50	1.75

The Joplin Home asked that these rates be made effective as of January 1, 1915. No change was asked in the direct line business rate, which remains at $2 per month. The city of Joplin filed a complaint alleging that the proposed rates were higher than the then existing rates and asked that the schedule be suspended until an investigation and appraisal could be made. An agreement was entered into whereby the rates were allowed to be put into effect February 1, 1915, as temporary rates and that if upon a hearing they should be reduced by the commission, the company should refund to the subscribers the excess received over the rates as filed by the commission.

Three appraisals of the property were made, one by W. F. Sloan, the second by George P. Player, telephone engineer for the commission, and the third by E. C. Hurd on behalf of the city. A public hearing was held at Joplin and considerable testimony was introduced. The commission found that the complaint as to the poor service was not proven and that part of the complaint was dismissed.

The value of the plant as of September 1, 1915, was placed at $530,000, and the rates as filed and charged temporarily were allowed and made permanent as of July 1, 1916.

Mention is made in the commission's opinion of the efforts of the officials of the company for the many provisions made for the convenience, comfort, health and general well-being of the operators and other women employes, and of the high class of service furnished the subscribers.

Commission Approves Sale of Chicago Automatic Plant.

An order was entered by the Illinois Public Utilities Commission, on June 6, authorizing the sale of the automatic telephone property of the Chicago Tunnel Co. to the Chicago Telephone Co., on the terms laid down in the ordinance passed by the city council on March 11. The only requirement imposed by the commission was that the Chicago Telephone Co. shall give the same connections to Independent companies that are now furnished by the automatic company, no stipulation being made for any further enlargement of service. The financial provisions of the commission's order are, in substance, as follows:

That the price to be paid shall not exceed $5,536,192, of which the Chicago Telephone Co. is to pay $3,236,192 and the American Telephone & Telegraph Co. $2,300,000.

The Chicago Telephone Co. is to sell that part of the property which is not usable, to the American Telephone & Telegraph Co. for $704,134 in cash.

The Chicago Telephone Co. cannot charge to its capital account more than $1,532,058, which has been found to be the value of the property to be acquired, of which amount $438,639 is fixed as the value of tunnel rights. The sum fixed as the value of the tunnel rights must be amortized in equal yearly amounts out of operating expenses and entirely eliminated from the capital account by February 19, 1929, the date of the expiration of the ordinances of the tunnel company.

Any sum over $1,532,058 paid by the Chicago Telephone Co. must be charged to its corporate surplus account and shall not be capitalized. The same condition attaches to the payment of $2,300,000 by the American Telephone & Telegraph Co., and in addition, the latter company is prohibited from making any collection from the Chicago Telephone Co. or from capitalizing the amount.

The Chicago Tunnel Co. is to pay the city $500,000 for the privileges granted in the ordinance passed by the city council on March 11, 1916, authorizing the sale of the automatic plant.

Foregoing its right under the ordinance, to foreclose on the property after the automatic company admitted that its bona fide number of subscribers was less than 20,000, the city of Chicago was made beneficiary in the transaction to the extent of $500,000.

The last step in the sale will be the permission of the United States Department of Justice, which has already been applied for.

Regulation of Rates.

Where a statute fixes the rate to be charged by a public utility, and forbids its increase except with the consent of the utilities commission, in an action brought to set aside an order of the commission denying an application for an increase, the court may, if the existing rate is found to be confiscatory because insufficient to pay the costs of service, adjudge the part of the statute fixing such rate to be inoperative, and enjoin the enforcement of the penalties provided for its violation.

A court, having no power to fix a rate to be charged by a public utility for services to be rendered in the future, cannot accomplish that result indirectly by enjoining interference with a rate which it finds to have been unassailable in the past. Emporia Telephone Co. vs. Kansas Public Utilities Commission; Supreme Court of Kansas; 154 Pacific, 262.

Injury in Stringing Telephone Wires Near Light Wires.

The pole upon which it was the duty of the plaintiff lineman to string a telephone wire stood in a public highway, and defendant city's pole, carrying high tension lighting wires, stood within two feet of the telephone pole, having been placed in position subsequent to the placing of the telephone pole, and in such a position that it was necessary for plaintiff to first pass the telephone wire over defendant's cross arm before passing it over the telephone pole cross arm. Defendant was bound to know that the linemen would throw hand lines over its cross arm, and extended an implied invitation to make such use of the pole, charging defendant with the duty of exercising the highest degree of care to maintain its wires in a reasonably safe condition as to such linemen.

The plaintiff telephone lineman in stringing a wire threw his hand line over the cross arm of defendant's pole, which carried high tension lighting wires, and which stood within two feet of the telephone pole, requiring plaintiffs to first throw the hand line over defendant's cross arm. The court held that the question whether plaintiff was guilty of contributory negligence in ascending the telephone pole without his rubber gloves or safety belt and without cleaning mud from his shoes, and in not holding to the telephone pole with one arm while reaching out to disenage the line from defendant's cross arm, when he knew that defendant's wires carried a dangerous current, was a question of fact for the jury. Maheney vs. City of Independence; Kansas City Court of Appeals; 183 Southwestern, 1,117.

Liability for Delay in Transmitting Message.

The plaintiff's brother tried to communicate by defendant's telephone line with the plaintiff to inform him of his mother's death. The address originally given was incorrect and the defendant immediately so informed the plaintiff's brother, who on the next day made another attempt to reach him at another point, when the defendant informed the sender that the plaintiff would call that evening. The plaintiff failed to get the connection on that evening, and when he did succeed on the next day, it was too late for him to attend the funeral.

In the absence of evidence that the plaintiff tried to have the funeral postponed, the court held that the facts were insufficient to show liability of the defendant for delay in transmission of the message, there being no evidence of negligence. Buckner vs. Gainesboro Telephone Co.; Court of Appeals of Kentucky; 182 Southwestern, 848.

Injury to Lineman.

A power company strung its high voltage, uninsulated wires 35 feet above the ground, and later contracted with a telephone company to carry its wires on the same poles. In pursuance of this contract the power company allowed the telephone company employes to mount its poles and string the wires but compelled them to place the same at a point 8½ feet below the power wires.

While so engaged the plaintiff's fellow servant, in order to disentangle a wire from the cross arm of a third company's pole, gave it a quick flip which caused it to fly up and come in contact with the power wire, whereby plaintiff was shocked and injured. The court ruled that the power company was not liable, since such negligent

act of the fellow servant was the proximate cause of the injury.—Kentucky Utilities Co. vs. Searcy; Court of Appeals of Kentucky; 181 Southwestern, 662.

Construction of Lines on Railroad Right-of-Way.

Where a telephone company acquired a right from a railroad company to construct and maintain its lines over the railroad's right-of-way, it could not thereafter grant to a telegraph company the right to string a wire on its poles, since the construction of the telegraph line would constitute an additional servitude upon the railroad's right-of-way, the purpose of the two corporations being essentially different, and the situation not being that of the lease of a right to use a wire already constructed.

In such case the telegraph company was a mere trespasser, for it entered on the premises in good faith under color of right, and the railroad company could remove from its premises the property of the telegraph company, using such force and means as was reasonably necessary to preserve its own property. Postal Telegraph & Cable Co. vs. Gulf Ship Island Railroad Co.; Supreme Court of Mississippi; 70 Southern, 833.

Liability for Abusive Language by Operator.

The defendant telephone company was under a reciprocal arrangement with a local telephone company whereby the defendant's lines ran through the local exchange at *B*. The defendant had no operator at *B*, the work there being done by the operator of the local company. There was no relay station at *B*, the operator having no duties to perform as to messages passing through, although he had a bell which notified him of all long distance calls, and by putting in a plug and pulling a key back he could cut in on the line. The employe of the local company interrupted the plaintiff's conversation and used offensive language to the woman with whom he was talking.

The court held that the local operator was not the defendant's agent when he committed the act in question, and defendant was not liable. Murray vs. Southern Bell Telephone & Telegraph Co.; Supreme Court of South Carolina; 88 Southeastern, 31.

Liability for Injury from Unused Wire.

The court did not err in allowing an amendment which merely amplified the statement of the plaintiff's cause of action. The petition charged that the death of the plaintiff's husband was due to electricity which came into contact with his person on account of the negligence of the defendant in not removing certain wires. If this charge was true, the defendant would be liable, whether the electricity was conveyed directly by the wires or was conveyed by them indirectly through the post or pillar, as alleged in the amendment.

A telephone company cannot, by ceasing to use a part of its line and disconnecting that part from the part which continues in use, relieve itself from the duty of exercising care to prevent injury to others from the part which is no longer in use. Southern Bell Telephone & Telegraph Co. vs. Ellis; Court of Appeals of Georgia; 87 Southeastern, 766.

Can Recover Damages for Service Interruption.

The Supreme Court of Michigan recently held that a telephone subscriber has the right to sue a telephone company for damages because the company neglected to give him telephone service for a week's period. In the absence of evidence that a telephone company acts recklessly, negligently or maliciously in interrupting the service the subscriber cannot recover punitive damages, but his actual damages may, however, include a just compensation for such annoyance and inconvenience as the subscriber may be able to show.

A decision of the Kent county circuit court is reversed in the case of Verde D. Harbaugh vs. the Citizens' Telephone Co., of Grand Rapids, and a new trial ordered. Harbaugh claimed $5,000 damages due to loss of business, inconvenience, etc.

Liability for Injury Caused by Sagging of Cable.

Where a telephone cable suspended above a railroad track sagged low enough to strike a brakeman on top of a train by reason of one of its supporting hangers becoming detached from a post, the railroad companys' duty of inspection demanded that it should discover this menace to its employes as soon as could be done by the use of ordinary care. If the cable had been down before striking the brakeman for a sufficient time for it in the exercise of ordinary care, to discover it, the court held that it was liable for the brakeman's injuries. Louisville & Nashville Railroad Co. vs. Mink; Court of Appeals of Kentucky; 182 Southwestern, 188.

Damage Suit for Injuries Due to Bad Working Conditions.

Margaret R. Hansen was recently awarded $10,000 damages in the district court at Park Rapids, Minn., in a suit brought against the Northwestern Telephone Exchange Co. and the Western Union Telegraph Co. for damages alleged to have been sustained while working as operator for both companies at Luverne, Minn. The complainant alleged that because of the chilly condition of the office in which she was employed and the negligence of the defendants, she contracted tuberculosis, necessitating her being confined for several months in the state sanatorium at Walker.

Liability for Negligence of Experienced Employe.

Where an employer furnishes an experienced employe with proper rubber gloves for his protection in working on live electric wires, the employer's foreman is not required to keep watch on the servant to see that he uses the gloves, instead of canvas or linen gloves. Where an unsuitable ladder was furnished an experienced lineman, he assumed the risk incident to its use, its insufficiency being obvious; and it is error to refuse so to charge the jury. Horan vs. New York, New Haven & Hartford Railroad Co.; Supreme Court of New York; 157 New York Supplement, 185.

The Use of Highways in Iowa.

The code of Iowa, section 2,158, authorizes telephone companies to use the highways, but section 2,159 declares that the lines shall be constructed so as not to incommode the public. The court held that, where a telephone company strung its lines along a country highway, it was bound to string the wires at such a height that a land owner entitled to pass from his fields into the highway would not be endangered, and the telephone company could not escape liability for injuries occasioned by low-hanging wires on the ground that the place was not a regular place for ingress and egress. Wegner vs. Kelley; Supreme Court of Iowa; 157 Northwestern, 206.

Injury to Operator by High Voltage Current.

The mere proof that a telephone operator was injured by a high current of electricity carried through the machine will not establish the liability of the master, which must be shown by some independent evidence. The circumstances attending the accident, however, may be considered in determining the cause of the injury.—Atlantic

Coast Line Railroad Co. vs. Newton; Supreme Court of Appeals of Virginia; 87 Southeastern, 618.

Summary of State Commission Hearings and Rulings.

California.

May: The commission authorized the Pomona Valley Telephone & Telegraph Union, of Pomona, Cal., to use the proceeds from the sale of $60,000 6 per cent. bonds in retiring $28,475 of notes, $2,000 of bonds, and balance for construction of office building costing approximately $25,000.

June 27: Hearing in San Diego on application of the Pacific Telephone & Telegraph Co. to have rates established throughout the state.

Florida.

June 27: Hearing to consider charges of discriminations in rates by the Home Telephone Co., of Jacksonville, Fla. This hearing was originally set for June 14 but has been postponed to June 27.

Illinois.

June 5: Continued hearing on the petition of the City of Peoria vs. the Central Union Telephone Co., to compel the Central Union company to reduce its rates to Peoria subscribers. Cross petition of receivers of Central Union Telephone Co. filed.

June 6: Order authorizing the sale of automatic telephone property of the Chicago Tunnel Co. to the Chicago Telephone Co., on the terms laid down in the ordinance passed by the city council on March 11. The commission's order requires that the Chicago Telephone Co. shall give the same connections to Independent companies that are now furnished by the automatic company.

June 6: Hearing on the complaint of the Byron Telephone Co. vs. the Winnebago County Telephone Co., relative to the respondent company constructing telephone lines in the territory occupied by the Byron Telephone Co. near Byron, Ill. Case 5,125.

Indiana.

May: The Southern Indiana (Bell) Telephone Co. surrendered its franchises at Greendale and Hymera and will hereafter operate its exchanges at these points under the indeterminate permit provided for by the public utility law.

May 26: The commission authorized the South Bend (Ind.) Home Telephone Co. to issue bonds in the sum of $31,200 to reimburse its treasury for money expended in installing 600 new telephone instruments, and also bonds in the sum of $8,900 to reimburse its treasury for betterments in the River Park exchange.

Kansas.

May 26: The commission dismissed the application of the Logan County Telephone Exchange, of Winona, Kan., for permission to increase its rates.

May 26: The Paola (Kan.) Telephone Exchange was authorized to issue bonds in the sum of $25,000 for the improvement of its plant.

May 26: The commission granted permission to the Elmont (Kan.) Telephone Association to issue $5,000 in stock to pay for the plant and betterments of the system of the association.

May 26: The Andover (Kan.) Telephone Co. was granted permission to issue $2,050 in capital stock.

Michigan.

June 15: Continued hearing on application of the Michigan State Telephone Co. for permission to install metered service in its Detroit exchange.

Minnesota.

June 5: Continued hearing on the petition of the City of Owatonna for a physical connection between the toll lines of the Tri-State Telephone & Telegraph Co. and the local exchange of the Northwestern Telephone Exchange Co. at Owatonna, Minn. The testimony of the Bell company was taken at the hearing held April 3 to 6 and the testimony of the City of Owatonna and the Tri-State company will be heard on June 5 at St. Paul.

Missouri.

June 5: The commission granted the application of the Peoples Telephone Co. for a certificate of public convenience and necessity, authorizing it to construct and operate a telephone exchange and system in Argyle, Mo. At a hearing held in Jefferson City evidence was produced to show that prior to February, 1916, telephone service was furnished at Argyle by an organization known as the Argyle Telephone Co., that the service was neither satisfactory nor sufficient, and that it ceased to furnish service in February, 1916.

June 5: The commission issued an order in Case 600, the city of Joplin, Mo., vs. the Home Telephone Co., of Joplin, making permanent a temporary increase in rates which the commission allowed the company to put into effect February 1, 1915, pending an investigation and appraisal of the company's plant.

September 18: Hearing in the matter of adopting a uniform system of accounts for telephone companies. Every telephone company in the state has been given notice that it will be expected to be present or to be represented, and to introduce any evidence necessary to assist in the promulgating of a uniform system of accounts for telephone companies. Case 937.

September 18: General conference in which representatives of all telephone companies in the state are to meet with the commission and to introduce all testimony and evidence required in the adoption of uniform rules, regulations and practices for telephone companies, relative to all charges, deposits, contracts, or guarantees for all kinds of service and connections. Case 938.

Nebraska.

May: The commission authorized the Farmers Telephone Co., of Taylor, Neb., to increase business and residence telephones 25 cents a month and farm telephones 50 cents a month. The commission found that the company operates 170 telephones and that some of its lines are 20 miles long in a sparsely settled and hilly country. It has paid no dividends and has contracted debts, mostly for wages, amounting to $900, and has no funds for reconstruction that may soon be necessary. The commission found the company received $1,657 in earnings during the past year, but had a net operating income of only $167. The increased rates apply to telephones owned by subscribers as well as telephones owned by the company. The rates on telephones owned by subscribers, effective July 1, are: Business, $1.50; residence and farm, $1. The rates on telephones owned by the company will be $1.75 for business, and $1.25 for residence and farm telephones.

May: The Lincoln Telephone & Telegraph Co. withdrew its application for an increase in rates at Tamora, Neb.

June 16: Hearing on application of the Monroe (Neb.) Independent Telephone Co. for permission to issue $55,000 of additional stock and for permission to increase its rates at Albion, Neb.

New Jersey.

May 27: On the ground that the reasonableness of telephone rates charged in Bayonne is to be determined in the general investigation of rates of the New York Telephone Co., the commission dismissed without prejudice a complaint filed by W. D. Salter, of that city.

Ohio.

May 29: Application filed by the Sandusky Home Telephone Co., of Sandusky, Ohio, for permission to issue $250,000 in bonds, $86,000 of which are to be put out at once. This is a new corporation recently organized to take over the Sandusky Telephone Co. The application states that the old company was overcapitalized and that the new organization is decreasing its stock and bonds.

June 5: The commission authorized the Benwood Telephone Co., a partnership to sell and convey to the Benwood Telephone Co., a corporation, all of its property and assets used in connection with the furnishing of telephone service at Sardis. Order 830.

June 5: The commission authorized the Benwood Telephone Co., a corporation, to issue $2,400 common capital stock in payment for the property of the Benwood Telephone Co., of Sardis, Ohio, a partnership, the purchase and acquisition of which was authorized in the above order. Order 831.

Oklahoma.

May 23: The commission denied the application of the city of Bartlesville, Okla., for an order reducing the rates charged by the Pioneer Telephone & Telegraph Co. in that city. The rates now charged in Bartlesville are $3 for single line business telephones and $2 for single line residence telephones.

June 13: Hearing in the case of the United Telephone Co., of Afton, vs. the Pioneer Telephone & Telegraph Co., relative to the routing of toll messages, at Oklahoma City.

Wisconsin.

June: The Wisconsin Telephone Co. filed an amended schedule of rates for its Ashland exchange. The one-party business rate is reduced from $48 to $42 a year; the two-party business rate from $36 to $30, and the rate for trunk lines for private branch exchanges from $36 to $30 a year. The new schedule became effective June 1.

June 2: Postponed hearing at Denmark in the case of the Denmark Farmers & Merchants Telephone Co. vs. the Brown County Telephone Co., the Wisconsin Telephone Co. and the Wayside Telephone Co., in regard to connection and rates.

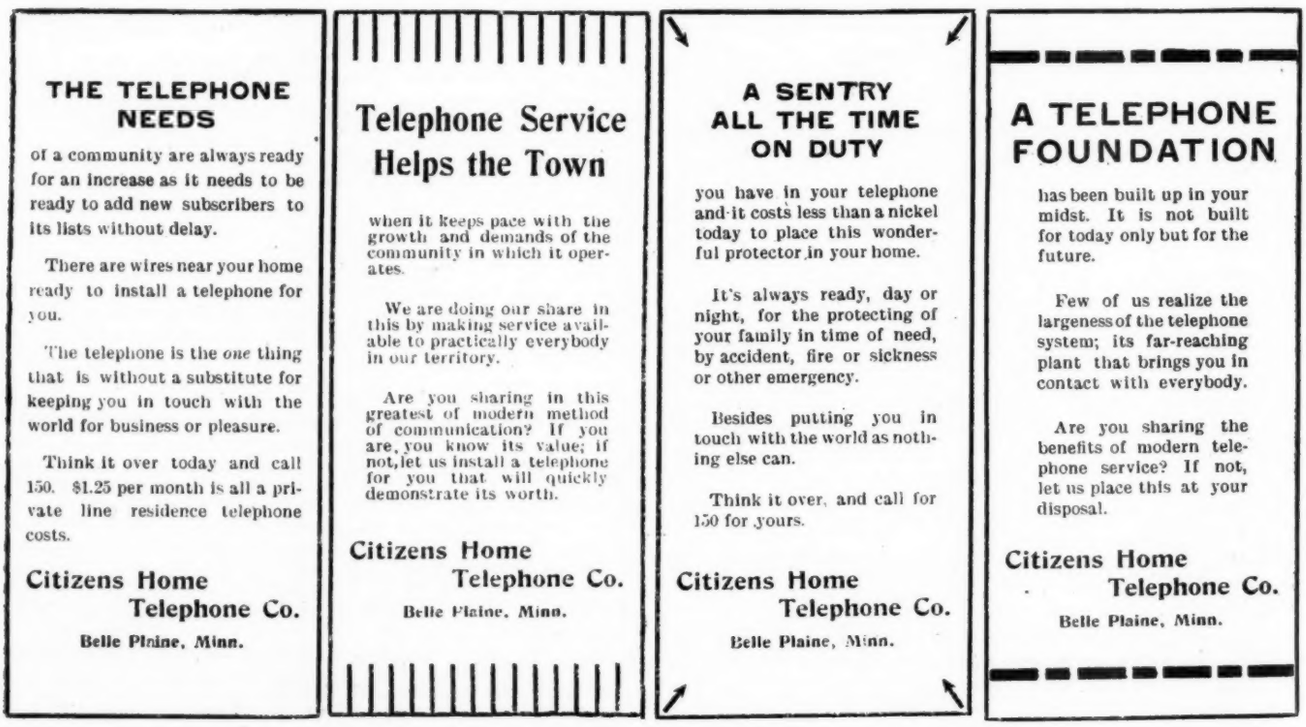
June 6: Hearing on application of the Necedah (Wis.) Telephone Co. for permission to increase its rates. The petition asks permission to establish a rate of $1 per month for residence telephones and $1.75 per month for business telephones.

Advertising and Other Thoughts of the Small Town Man

Advantages of Advertising and Results to be Attained—Points to be Kept Constantly Before the Public—A Trouble Slip and Record Envelope—Paper Presented at Annual Convention of Minnesota Independent Telephone Association

By J. A. Schoell

Small towns ranging from a few hundred to a few thousand in population, must be like the common people, about whom one of our presidents said: "The Almighty must think well of them for there are so many." While the development of the telephone in large centers has been marked, it has been more so in the smaller towns, so much so that where we formerly spoke in units of telephones, we now speak in hundreds. And when we consider that in this development the lines are reaching far into the country, bringing the telephone to those who are, by their environment more keen to appreciate its blessings, it would seem that advertising the telephone is like a joke.


THE TELEPHONE NEEDS
of a community are always ready for an increase as it needs to be ready to add new subscribers to its lists without delay.
There are wires near your home ready to install a telephone for you.
The telephone is the one thing that is without a substitute for keeping you in touch with the world for business or pleasure.
Think it over today and call 150. $1.25 per month is all a private line residence telephone costs.
Citizens Home Telephone Co.
Belle Plaine, Minn.
Telephone Service Helps the Town
when it keeps pace with the growth and demands of the community in which it operates.
We are doing our share in this by making service available to practically everybody in our territory.
Are you sharing in this greatest of modern method of communication? If you are, you know its value; if not, let us install a telephone for you that will quickly demonstrate its worth.
Citizens Home Telephone Co.
Belle Plaine, Minn.
A SENTRY ALL THE TIME ON DUTY
you have in your telephone and it costs less than a nickel today to place this wonderful protector in your home.
It's always ready, day or night, for the protecting of your family in time of need, by accident, fire or sickness or other emergency.
Besides putting you in touch with the world as nothing else can.
Think it over, and call for 150 for yours.
Citizens Home Telephone Co.
Belle Plaine, Minn.
A TELEPHONE FOUNDATION
has been built up in your midst. It is not built for today only but for the future.
Few of us realize the largeness of the telephone system; its far-reaching plant that brings you in contact with everybody.
Are you sharing the benefits of modern telephone service? If not, let us place this at your disposal.
Citizens Home Telephone Co.
Belle Plaine, Minn.

Some of the Newspaper Advertisements of the Belle Plaine Telephone Co., Belle Plaine, Minn.

Probably no other utility is its own advertiser to as great an extent as the telephone, but still it suffers by not having its own horn blown to a greater extent. A much greater interest can be obtained from the public if we remind it of the great thing telephone service is and the efforts that are constantly being made by operating companies to keep the telephone business where it belongs—at the top. In this way, we will also obtain one of the greatest of all assets—the good will of the public which we serve.

In the average town of 500 population and upwards, the telephone investment is about as heavy as in any other industry. And its telephone service is always before one, in that it interweaves the farmer and local townspeople together as no other means can. So if one wants to transmit the spoken word the telephone must be used. If one wants to bank money, it can be put in a selected bank, planted as you wish, or invested in telephone stocks. If the electric light service is not to the public's liking, it has recourse to gas or kerosene lights. This is also true of the merchants or business man you deal with. But the telephone needs not to advertise, "beware of substitutes," for it has none.

The public and ourselves are apt to take the telephone as a matter of fact. That is a good recommendation, but let us stop and consider what is embraced by telephone service. It means that business can be transacted locally or over long distances, as well as if face to face. That business is making good use of the telephone is certain. In case of an emergency of any kind, it is always the first recourse.

At the last state firemen's convention the discussion of fire alarms brought out the fact that nearly all fire alarms are sounded over the telephone, and one speaker gave the telephone companies credit for having their service available practically in every instance it is wanted.

In a social way we would all miss the telephone, for many a pleasant visit can be had over the wires, keeping one in touch with friends.

The telephone is a most important link in the three great factors of life—business, emergency and social. This ought to be constantly kept in mind and efforts made to bring it to the mind of the public. You will be surprised at the good feeling the public will have towards your company if it is taken into your confidence.

Showing interest in your work in furnishing a pleasing, rapid service means friends, and by keeping abreast of

the times with good equipment and covering your territory so that the service is available to all in your sphere, increases the good will. When you are doing this, your efforts must not lag. A desire is thus created to have all that possibly can do so, make use of the telephone, at

Number	Name
Wall Set	Address
Desk Set	
Ext. Set, Wall, Desk	
Ext. Bell	Office Term. No.....
	Can No.....
Private Line, Business	Can Term. No.....
Party Line, Business	.....ft. duplex wire
Private Line, Residence	.....ft. open wire
Party Line, Residence	.....poles from lead
Farm Line	Make of instrument:
Extension	.....
Switched by New Prague	.....
" for F. & M.	Date installed.....
" " Norwood	Date taken out.....
" " Carver	Why taken out.....
Remarks	
.....	

Trouble-Slip Envelope and Subscriber's Record.

rates that are in proportion to the service furnished. And value to your subscribers is increased by this means.

How can this best be done? First, by word of mouth advertising among your people, you will get a boost if your service and treatment of the public merits it. By advertising as news, by keeping in right with your newspaper men, they will be glad to give you space if you have news that shows you are for improving the town. Newspapers like to crow about the good points of a town and you want to give them something to crow about. Play fair with the publisher by giving him as much of your printing as possible and have him understand that you are earnestly trying to build up the town with a service that is right.

Advertise regularly in your local paper—you need not use big space. Change your advertisement frequently, have a good position and make the advertisements short and to the point. By covering some good point in this way, you will be able to make them of interest.

You might ask: "What will we advertise?"

Well, there is so much, that you need not worry on that point. When you begin bringing out the advantages of your service and soliciting new business, lay stress on the many advantages you have to offer in your service. Have talks with your subscribers about the service, impressing them with the fact that you want their co-operation to make the service the best to be had.

A great field exists for the state association to bring about a uniform system of advertising that can be made use of by the average company. By co-operating in this work, the cost to each company will not be high, as cuts and electrotypes can be made in quantities, but try to get along with what help you have. Keeping everlastingly at it, is the best way to get results.

Trouble appears to be the one great item around every telephone office. The telephone seems to be the only business in which men are always looking for trouble. As this is so important, some effort should be made to keep track of troubles.

A slip ought to be made out for every case, and should be properly O. K.'d by the troubleman and filed. A good system is to have a large-sized envelope, say a No. 7, on the face of which is printed all the data relative to subscribers. It should be arranged so that it can be quickly checked, showing all the details as to number, class of service, can numbers, terminal numbers, etc. A record of this kind will be found very handy.

It is to be marveled that an industry, anchored as is ours, has not been able to get together and form an association embracing every telephone operating company in the field. Much good can be accomplished along various lines by so doing. The public has protected itself by having a commission to take its part and we are certainly entitled to make as fair and reasonable a showing before the public as a whole, and its representatives, whenever occasion requires.

This can best be done by a large association which is represented by a small executive committee, and this in turn by an executive agent whose business it will be to make the members of the association feel that they have something to do worth while in helping to solve the problems that confront us. This would be treating the public and its representatives, the commissions, squarely. The telephone business is surely not in need of being ashamed of itself or of taking a back seat for any other industry. No other business is more on the square.

They Know Now, But Alas! It Is Too Late.

The lineman, when half way up the pole, tried to strike one of his spurs into a tin sign. *He couldn't.*

The installer patted a strange bulldog on the head to see if the brute's disposition was affectionate. *It wasn't.*

The counter man tried out the irate subscriber to see if he could fight. *He could.*

The electrician tried the current on himself to see if it was strong. *It was.*

The cable splicer lighted a match to see if there was gas in in the manhole. *There was.*

The wire chief asked the operator to marry him, just to see if she was engaged. *She wasn't.*

The operator didn't believe that if she indulged in daydreams while on duty she would have a nightmare. *But she did.*

The foreman thought the rope was strong enough to lift the pole, but he was not sure. *He's in the hospital now.*

The commercial man used hot, cross puns, thinking they were as good as hot, cross buns. *They weren't.*

The trouble shooter tried to cross in front of the auto with his motorcycle. *He couldn't.*

The mail clerk took a chance on that letter going under two cents postage. *It wouldn't.*

The P. B. X. operator thought that big customer wouldn't mind waiting. *He did.*

The stenographer figured that that "struck over" wouldn't be misread. *It was.*—Southwestern Telephone News.

Banquet Tendered Employes of Columbia (Pa.) Company.

In redemption of a promise made some time ago that a dinner would be given when the company had attained a certain number of subscribers, Mrs. Esther F. Young, president of the Columbia (Pa.) Telephone Co., fulfilled her obligation, on May 17, by entertaining all the employes and officials of the company at an elaborate shad dinner at Hotel Columbia.

There were also several out-of-town guests present, including C. J. Larsen, of Hazelton, Pa., service and traffic engineer of the Eastern Pennsylvania Independent Telephone Association; C. M. Thompson, of the Kellogg Switchboard & Supply Co.; Harry S. Young, of the H. C. Roberts Electrical Co., and George B. Rudy, general manager of the York (Pa.) Telephone & Telegraph Co.

H. A. Oberdorf, general manager of the Columbia company, was toastmaster of the occasion, a number of those present responding to his call. An interesting talk was made by Mr. Larsen on the progress that has been made in the Independent field in the last two years. A social hour in the parlors of the hotel concluded the evening's entertainment.

New Exchanges to be Erected at Beloit and Concordia, Kan.

The United Telephone Co., of Abilene, Kan., is planning to erect new exchange buildings at Beloit and Concordia.

The two buildings will be of somewhat similar design and construction. They will be two-story brick structures about 35 by 70 feet and will represent an expenditure of about $15,000. This sum, however, does not include the installation of new central office equipment and other improvements which are to be made in these plants.

A Unique Form of Telephone Publicity.

The "Telephone City" is the subject of a novel and interesting water-color picture which is being exhibited by the Chicago Telephone Co. All of the company's buildings have been grouped by the artist in such a way as to make a very realistic telephone city. The drawing embraces the company's 47 office buildings and four other telephone structures—barns, garage and shops. The buildings are arranged in the form of city with streets and boulevards and numerous parks, as may be seen in the accompanying illustration.

The picture is a visible manifestation of the size and importance of the industry that words could not convey.

Standing in the center of the drawing and dominating the surroundings, rises the company's main office building, known as the "Bell Telephone Building." The headquarters and general offices of the Central group of Bell companies are housed in this structure. It is 20 stories in height—the largest telephone building in the world.

As nearly as possible, the other buildings have been placed according to their geographic locations in the city and suburbs. In the foreground may be seen the downtown offices and to the right, the north side offices. The south side offices are shown on the left and in the background are the suburban exchanges of Gary, Hammond, Joliet, Aurora, Elgin, Waukegan and other cities.

The telephone office buildings occupy about 27 acres of land. Margaret Mackin Hall, the company's new recreation camp for women employes, is shown in the background to the right. The recreation camp embraces 35 acres, making a total of 62 acres used by the Chicago Telephone Co.

In the buildings represented in the picture there are 1,370,358 square feet of floor space, or nearly 32 acres, devoted to switchboard rooms, offices, rest rooms, storage rooms, etc.

To operate this big plant, about 13,000 persons are employed, of whom 7,000 are telephone operators.

The Chicago Telephone Co. now has in service more than 540,000 telephones in Chicago and suburbs and the total originating calls average 2,800,000 per day.

The "Telephone City" picture is the work of H. M. Pettit, a well known artist. Mr. Pettit made an individual study of the buildings, so that the surroundings might be preserved as much as possible. Photographs and architects' plans were used to ensure accuracy in reproduction.

A Reproduction of Recent Publicity of the Chicago Telephone Co.—"The Telephone City."

Movement to Erect Monument to Professor Joseph Henry.

On the evening of May 24 Charles B. Alexander, of Brooklyn, a member of the State Board of Regents, gave a dinner at the Ten Eyck hotel, Albany, N. Y., in honor of Professor M. I. Pupin, of New York, and J. J. Carty, president of the American Institute of Electrical Engineers and chief engineer of the American Telephone & Telegraph Co. After the dinner all the guests went to the state education building where they were shown the apparatus used by Professor Joseph Henry in his interesting experiments with the electromagnet, the foundation of the telegraph, which was only a practical application of the principles that Professor Henry discovered. Mr. Henry at the time of his experiments, 1827-1831, was professor of mathematics in the Albany Academy. In 1832 he became professor of natural philosophy in Princeton college. In 1834 he was appointed the first chief director of the Smithsonian Institution, and its secretary, positions he held until his death in 1878.

As a result of the dinner and the visit to the state museum, a movement has been started by those who were present to erect a monument to Professor Henry in the small park fronting the Albany Academy.

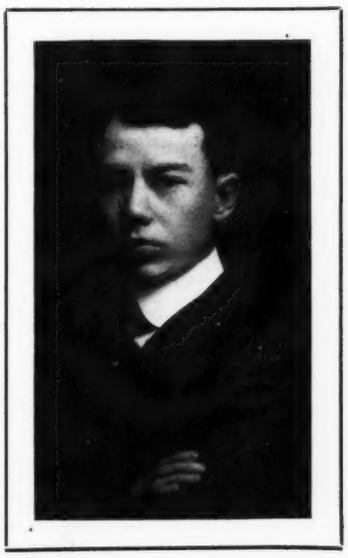
Report of Ohio State Telephone Co. for April.

The Ohio State Telephone Co., of Columbus, Ohio, reports for the month of April, 1916, gross earnings of $296,825, as compared with $270,843 in the same month a year ago. The surplus for the month, after deducting expenses, miscellaneous charges and preferred dividends amounted to $46,573, as against $32,271 in April, 1915.

Personal Items of Interest to the Operating Field

W. C. ROBERTS, of San Antonio, Texas, has been appointed manager of the Southwestern Telegraph & Telephone Co. at San Marcos.

E. C. BLOMEYER, secretary of the Texas Telephone Co., Waco, Texas, is a native of Missouri. After following several unromantic occupations, keeping books for a general store, selling furniture on the installment plan, writing advertisements for a department store, doing newspaper work, etc., Mr. Blomeyer, in 1904, broke into the telephone business as a sort of hired hand for a telephone exchange in southeastern Missouri. When the exchange was made a part of the Southeast Missouri Telephone Co., he was made auditor of that company, and stayed with it until it grew from three to 25 exchanges. He was later made secretary and then made secretary-treasurer. During the time he also had various connections with other companies and served the Mississippi Valley Telephone Association and other such organizations in various capacities.



E. C. Blomeyer.

In 1912 Mr. Blomeyer went to Waco, Texas, as auditor for the Brazos Valley Telephone & Telegraph Co., and in the same year was elected secretary-treasurer. When the Brazos Valley company was taken over by the Texas Telephone Co., Mr. Blomeyer was retained as secretary for the Texas Telephone Co. and its associated properties.

At the annual convention of the Texas Independent Telephone Association, held last March, Mr. Blomeyer was elected secretary.

OSCAR ORTLAND, manager of the Citizens Mutual Telephone Co., of Jefferson, Iowa, has resigned, effective June 1.

PRATT SEXTON, of McKenzie, Tenn., recently assumed the post of manager of the Huntingdon Home Telephone Co., of Huntingdon, Tenn.

J. H. RHODES, of Wilmington, Ill., has succeeded J. M. Brown as manager of the Interstate Independent Telephone & Telegraph Co., at Joliet, Ill.

F. C. READING, commercial representative of the Bell Telephone Co. of Pennsylvania, at Reading, Pa., has been promoted to the position of local manager at Clearfield, Pa.

J. M. ALTON, of San Francisco, Cal., has been appointed manager of the Visalia, Cal., exchange of the Pacific Telephone & Telegraph Co., succeeding A. H. Denison, resigned.

W. R. JOHNSON, of Hastings, Neb., has been made manager of the Nebraska Telephone Co., at Fremont, Neb., to succeed L. H. Rogers, who recently resigned to engage in the grocery business.

D. M. RICKS, for several years local manager of the Mountain States Telephone & Telegraph Co. at Telluride, Colo., has been promoted to the management of the newly established Delta (Colo.) district.

BERT WHEELER, chief clerk of the Gary, Ind., exchange of the Chicago Telephone Co., has been appointed temporary manager at Gary, to succeed L. H. Meyer who recently resigned to enter the drug business.

J. D. PARK was recently elected manager of the Kenton Telephone Co., at Kenton, Ohio, to succeed Amos A. Geiger, deceased. Mr. Park has been in the employ of the Kenton company for several years.

M. L. MIDDLETON, of Waco, Texas, has succeeded C. S. Powell as manager of the local exchange of the Texas Telephone Co., at Port Arthur. Mr. Powell has been transferred to the general offices of the company at Waco.

F. L. SHUMAN, district manager for the North Dakota Independent Telephone Co., at Bismarck, N. D., has purchased the holdings of the majority stockholder (C. E. V. Draper) of the Mandan Telephone Co., of Mandan, N. D.

HENRY DAKIN, former city engineer of Elgin, Ill., and for four years chief clerk in the engineering department of the Chicago Telephone Co., has been appointed plant chief of the Detroit district of the Michigan State Telephone Co.

WM. C. PHILLIPS, local manager of the Federal Telephone & Telegraph Co., at Le Roy, N. Y., for the past four years, has resigned effective on June 1, at which time he assumed a position as manager of the new business department of the Pavilion Natural Gas Co.

B. M. DUNN, who for nine years was local manager for the Farmers & Citizens Telephone Co. at Springfield, Minn., recently accepted a position as commercial representative with the Tri-State Telephone & Telegraph Co., of St. Paul, Minn., and will cover the territory west of Mankato, Minn.

CHARLES VINCENT has succeeded P. C. Harmon as manager of the St. Croix Telephone Co. at New Richmond, Wis. Mr. Harmon resigned for the purpose of entering another field of business. Mr. Vincent was formerly connected with the Wisconsin Telephone Co. at Chippewa Falls and Hudson.

W. A. COOPER, formerly manager of the Brevard County Telephone Co., at New Smyrna, Fla., has resigned to accept a position as manager of the Antelope Valley Telephone Co., at Lancaster, Cal. Mr. Cooper has been engaged in the telephone business for the past 15 years and is well known among Independent telephone men.

HENRY W. TRUMBOWER has been appointed a member of the Wisconsin Railroad Commission, to succeed Halford Erickson, resigned. Mr. Trumbower, who is assistant professor of political economy at the University of Wisconsin, is a graduate of Lehigh University, and has taken special courses in political economy at Princeton and at the University of Munich. He is 34 years old.

B. E. SUNNY, president of the Chicago Telephone Co. and also of the Central group of Bell companies, on May 22, was guest of honor at a dinner in commemoration of his 60th birthday. The dinner was served at the Blackstone Hotel, Chicago, and was attended by many of Mr. Sunny's associates in the telephone companies of which he is the head, and by many of Chicago's prominent business and financial men. The out-of-town guests included Theodore N. Vail, president, N. T. Guernsey, general counsel, and Thos. D. Lockwood, patent attorney of the American Telephone & Telegraph Co.

JOHN J. CARTY, chief engineer of the American Telephone & Telegraph Co., was recently awarded the Franklin medal at the Franklin Institute, Philadelphia, Pa. The medal is an annual award made to the workers in physical science, without regard to country, who have done most to advance a knowledge of physical science or its application. The award to Mr. Carty was made in recognition of his long continuous activity in telephone service; his importance and varied contribution to the telephone art; his work in establishing the principles of telephone engineering and his signal success in directing a large staff of engineers and scientists to the accomplishment of telephone transmission of speech over vast distances.

The Use of Dynamite in Digging Deep Pole Holes

Economy in Both Saving of Time and Labor Effected by Blasting Deep Pole Holes—Subject of Particular Importance in View of High Cost of Labor—Method of Blasting Pole Holes—Results of Actual Tests Made

The employment of dynamite for digging deep pole holes is fast supplanting the slower and more costly method of hand work. It is of marked value, especially at this time, owing to the scarcity and high price of labor. Dynamite not only saves time and expense, which are big factors, but it reduces the number of laborers required for pole hole digging as well. Another big advantage is that when using dynamite in this class of work the force of the explosion packs the dirt solidly around the sides of the hole. Then again, the tendency in hand digging, especially in hard soils, is to make the holes shallow, and this danger is wholly eliminated by the use of explosives.

Using small charges of dynamite to loosen the soil, to make digging easier, is a very common practice, and one that is known to all. After exhaustive experiments, carried on in almost every condition of soils, a new method for blasting pole holes has been perfected. Briefly speaking, this new method of digging is as follows:

In order to relieve the pressure of the soil that is to be excavated, and to prevent the exce sive shattering of sides, a hole is dug from six to ten inches deep, to the full diameter of the desired hole. In digging the shallow hole, care should be taken to see that the sides are trimmed straight and clean.

A small bore hole or loading hole is then put down in the center of the shallow hole to the desired depth. The ordinary punch bar will not work well in very deep holes. An auger will probably work better, but a drill no doubt will give the best results of all. The nature of the ground and preference of the workers largely decide the kind of drilling tool used.

As the charges of dynamite must be placed at varying distances in this bore hole, a piece of lath or other light stick is best used. The charge intended for the bottom of the hole is tied on the end of the lath. The other charge of dynamite, consisting of a fraction of a stick, up to a full stick, are also tied to the lath at intervals of from 6 to 24 inches. The spacing between the charges is determined by the hardness of the soil and the diameter and depth of the hole desired. This properly spaces the charges, and insures the firing of the lower ones.

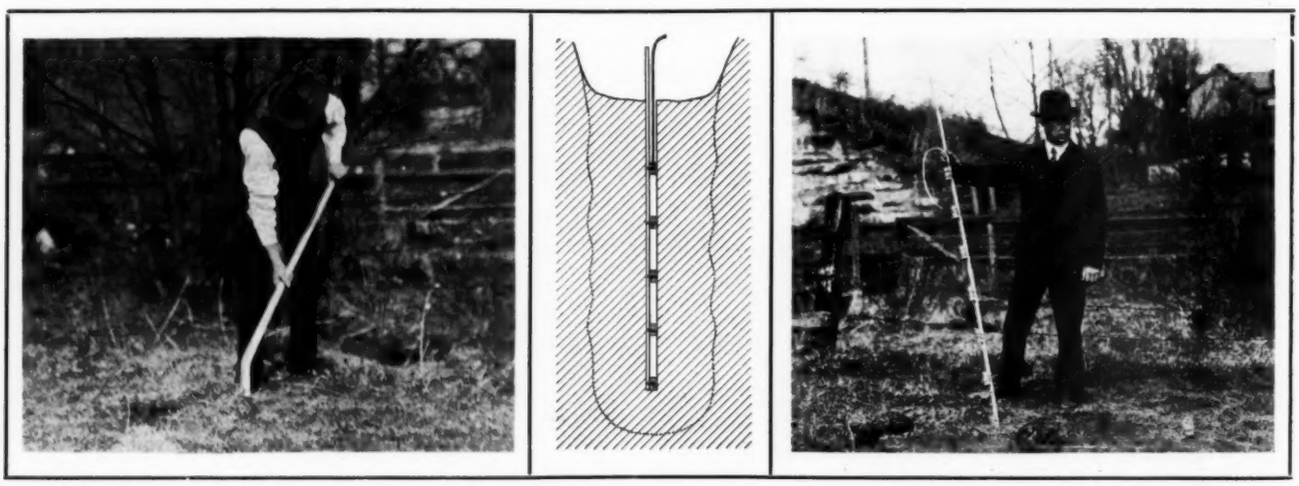
The top cartridge or piece of cartridge is primed with a No. 6 blasting cap and fuse, or with an electric blasting cap. This primer charge is tied to the lath at such a distance, so when placed in the hole it will be from 20 to 24 inches below the surface.

The charges of dynamite thus tied to the lath are lowered into the bore hole, the charge that is primed, of course, being placed up. In placing this into the bore hole, care should be exercised to see that no clots of sod or stones fall into the hole, as these would interfere with the proper loading and firing. If the bore hole is full of water no tamping is necessary, but otherwise, a few inches of tamping generally improves the result of the blast.

In tamping care should be taken not to let the tamping material go below the first or priming charge, as it will interfere with the explosion of the lower charges. Water does not affect the proper exploding of the lower charges, but loose dirt does.

The primer is then fired, and the other charges of dynamite in the hole are detonated by the force of the explosion so caused.

Following the method of loading just described, test shots were made and results noted. The soils varied from hard, dry clays, to a wet, compact clay, with more or less shale, and a digging bar or hand chisel was used in putting down the bore or loading hole. The holes were 4½ feet deep.



A Shallow Hole Must First Be Dug—Cross Section Showing How Charges are Placed in the Hole—Ready to Insert Charges.

In the first hole one-half cartridge of low freezing, extra 40 per cent. dynamite was used, placed untamped in the bottom of the hole. A cavity of about 30 inches in diameter was blown in the bottom of the hole and the earth for 2½ feet below the surface thoroughly disturbed. The results of this shot were poor.

In another hole one-third of a cartridge of straight 60 per cent. dynamite was placed in the bottom of the hole, one-third cartridge of the same, eight inches from the bottom, and one-half cartridge, 40 per cent. low freezing extra 20 inches below the top. The cap was placed in the top charge, and there was no tamping. The results were good, as a clean and open hole was blown out.

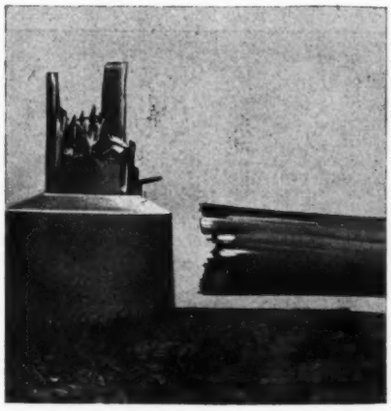
In another a cartridge of 60 per cent. straight dynamite was placed in the bottom of the hole, another cartridge of

EVEN IF THE POLE IS ENTIRELY ROTTED AWAY

It can be made stronger than ever by the use of the Orr Reinforcement.

A customer on the Pacific Coast reinforced a 30-foot pole according to our specifications; the original diameter was 12 inches, reduced at the point of decay to less than 4 inches. The reinforced pole broke on a direct horizontal pull of 2,831 pounds at the top; and the customer remarked in reporting the test to us, that "the concrete was not cracked or damaged in the least." A photograph is shown of the pole after the break.

Our specifications show explicitly how many rods should be used and how they should be spaced to secure the best results. A stronger reinforcement is provided as the hight of the pole and demands upon it increase, but the same reinforcing material and equipment are used whether the poles are 30 foot or 70 foot.

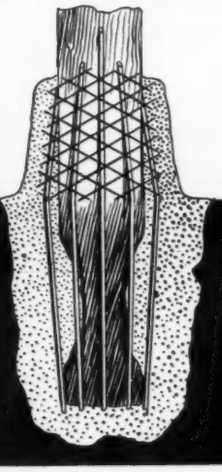


The Orr Reinforcement will not only indefinitely extend the life of your poles at about one-third of their replacement cost, but the cost of changing arms and the possibility of interrupted service are eliminated.

Twenty-four of the country's leading telephone and telegraph companies argue in favor of the Orr Process. They have put it to the supreme test—service performance.

Read their opinions of Orr Pole Reinforcing in our 28-page book, Net Results. It also contains reports of extensive tests of Orr Reinforced poles and a thorough description of the Orr Process.

Write for a copy of Net Results today.



HUBBARD & CO.
PITTSBURGH
NEW YORK - CHICAGO - SAN FRANCISCO

the same 12 inches up, and another of the same 12 inches up from that. The hole was left untamped, and the result secured could be classed as excellent. It dug a clean and open hole, and threw out more dirt than was thrown out from the hole mentioned just before this.

In one hole were placed five quarter cartridges of straight 60 per cent. dynamite, spaced about six inches apart, beginning at the bottom of the hole, cap at top, and untamped. The results were excellent, the hole was uniform in size from top to bottom, and the dirt was well blown out.

In a wet red and blue clay soil a bore hole was put down to a depth of six feet. Seven charges, each containing one-third of a cartridge of 50 per cent. straight dynamite, were placed six inches apart, beginning at the bottom. This blew a uniform hole 78 inches deep. Some of the top soil fell back into the hole, which required but little hand work to clean out. The walls of the hole were well compacted.

Additional tests made over a variety of soil conditions gave practically the same results.

It will be seen from these that trial shots are necessary to determine just what charges and spacing will give the best results in the particular soil.

Generally speaking, from two to six minutes of hand work is required to finish the blasted hole. Sometimes a plug or bridge of earth is left at the top of the hole. This is not objectionable, as it can easily be shoveled out, and it guards against an excessive shattering of soil at the top of the hole. Good blasting does not injure the sides of the hole, and much of the dirt is not blown out, but is packed tightly against the sides of the hole.

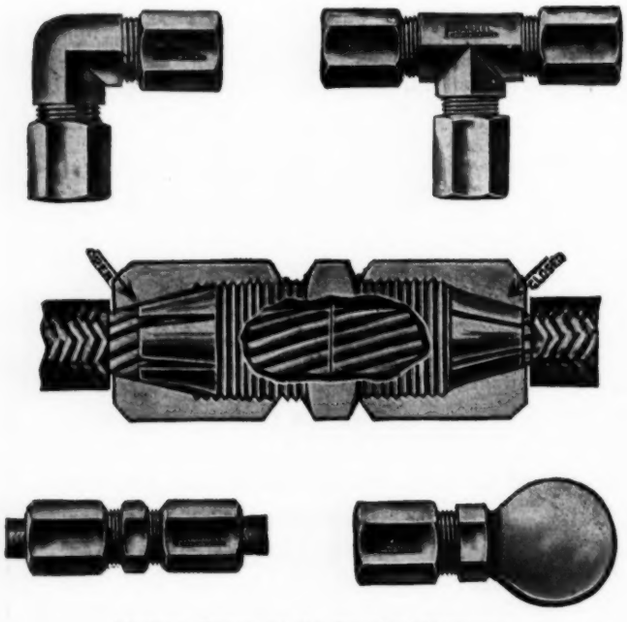
Straight dynamites are more sensitive, quicker in their action, and are frequently found more satisfactory in warm weather, while the extra and low freezing grades will give good results, both in cold and warm weather.

From Factory and Salesroom

Improved Type of Solderless Connector.

The electrical department of the Frankel Display Fixture Co., of New York, has recently been incorporated under the title of the Frankel Connector Co., Inc., to carry on the manufacture of Frankel solderless connectors, Frankel testing clips and other electrical specialties.

The illustration shows several types of the Frankel connector. The phantom view in the center shows the principle of the connector and how the design has permitted the use of the fewest possible parts to make a rigid connection. This simple construction, it is claimed, reduces the liability of the connector getting out of order and in addition provides a connection that is strong, mechanically and electrically.



Various Types of the Frankel Connector.

The company is also manufacturing a line of connectors for panel boards to replace soldered terminal lugs for front and back connections.

By using Frankel solderless connectors in place of the soldered type connection, the makers claim a substantial saving of time as well as the added advantage of providing a joint that can be broken down without harm to the cable.

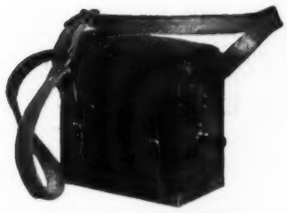
In the report containing the approval of the Frankel solderless connector, the Underwriters' Laboratories, Inc., states regarding a test: "At 1,000 amperes, the soldered joint melted and dropped from the joint. The joint where the wires were attached to the (Frankel) connectors were unaffected by the test."

The office and factory of the Frankel Connector Co., Inc., are located at 177-179 Hudson street, New York.

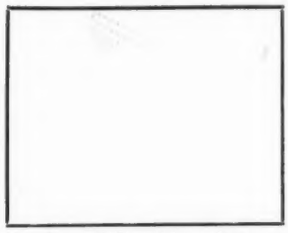
New Addition to Stromberg-Carlson Sales Force.

The Stromberg-Carlson Telephone Mfg. Co.'s sales organization at Rochester, N. Y. has been strengthened by the services of R. T. Pierson. Mr. Pierson is a practical telephone salesman whose training included shop work, installation of equipment in the field and engineering work of a varied nature during a period of over six years in the employ of the Western Electric Co. Prior to his new connection with the Stromberg-Carlson company he was a

R. T. Pierson.



MIDGET "STEWART" TEST SET



Any Other Test Set

What You Get When You Buy A "STEWART" Test Set

1. You get a good long, strong shoulder strap with buckle for adjustment.

2. You get a good leather top for protection.

3. A good set of long green line cords with the best pair of test clips made.

4. A space set aside to keep the cords and receiver when not in use.

5. A complete telephone talking circuit arranged so as not to pick up pole noise.

6. A test set without a switch to throw when you want to ring or talk. All automatic.

7. A man size battery guaranteed for one year and it usually lasts from 18 months to 2 years.

8. A test set that will tell you when the line is in trouble and how far the trouble is from you. It tells you exactly which way the trouble is from you without opening the line.

9. A trial order to prove all of the above claims.

10. With a "STEWART" Test Set you will always find your trouble the first time over the line, and without cutting the wire.

What You Get When You Buy Any Other Test Set

1. Nothing doing unless you buy a strap and put it on Test Set yourself.

2. Never heard of a top being put on, to date, anyway.

3. Binding posts for line cords always, but line cords never.

4. As no cords are furnished, there is no place for them.

5. A talking circuit "sure" but no place to put the Set to use it, except hang it on the pole and then "My, what a noise."

6. Switches always and usually thrown the wrong way when you want to ring or talk.

7. A flash light battery which will dry out in the summer or freeze up in the winter. No guarantee.

8. With any other Test Set "I should say not," never heard of such a thing before.

9. No use of a trial. Ain't much that it will do anyway.

10. Well you might stumble on to the trouble if you look long enough, and open the line often enough.

The leading colleges are teaching our method as used with our Test Set.
May we ship you one of our instruments on trial? Then you can judge for yourself.
Our new Exploring Coil will help your Cable Tester locate water.
We also sell on trial:
A Direct Reading Test Cabinet to be used on magneto exchanges, which can't be beat.
A Resistance Meter that operates off of a 5-bar telephone, and reads your trouble direct off the dial.
A Cable Tester that will actually locate water.
Our new literature will be in your hands soon. If you don't get yours, write us.

STEWART BROTHERS

OTTAWA, ILL.

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

member of the Western Electric Co.'s branch office sales force at Buffalo, N. Y.

The Stromberg-Carlson company is developing some new Inter-Comm-Phone equipment and Mr. Pierson will specialize in the important work of marketing this class of apparatus.

Kellogg Small Magneto Wall Switchboards.

The Kellogg Switchboard & Supply Co. has designed two small magneto wall switchboards for localities in which there are only a few lines and no future demand for a large exchange type switchboard is likely. These practical little boards are for use wherever a switching station is needed. The company states they will prove a convenience and source of revenue and yet take only a small amount of an attendant's time.

The smaller wall switchboard known as Code No. 9-A, is a 10-line board especially built for service where no more than 10 lines will be needed. It is designed for operation without the use of cord circuits having ringing and listening keys or clearing-out drops. The cord circuit consists of one long plug and one short plug connected by means of a two-conductor cord. The circuit is so wired that the short plug does not cut off the line drop, while the long plug cuts it off.

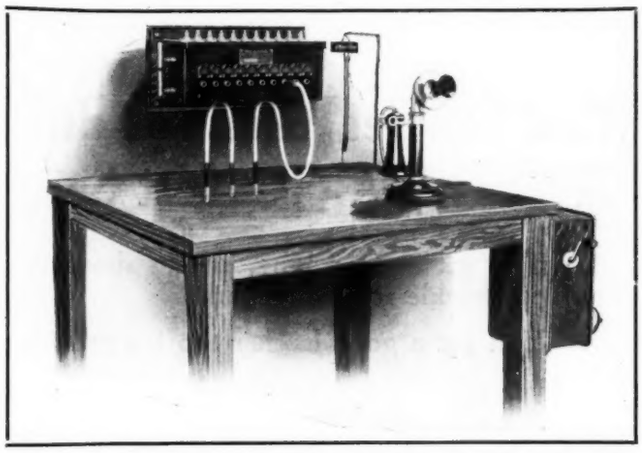
The operator's set consists of a regular magneto telephone with cord and one long plug for answering and ringing the lines.

The switchboard is provided with saw-tooth spark gap lightning arresters in connection with a heavy common group strip for each line. This switchboard, with the telephone, is complete in itself. Its operation is as follows:

Any telephone connected to the switchboard signals in the usual way by operating the hand generator. This throws the drop immediately above the jack associated with its line, thus ringing the night alarm bell to call the attention of the attendant to the call. The attendant answers by inserting the plug attached to the telephone, in the jack below the drop, the shutter of which is released. This action automatically restores the shutter and connects the attendant's telephone with the calling party.

Upon determining the connection desired, the attendant removes the telephone plug from the jack and inserts one of the plugs of the connecting cords. She then inserts the telephone plug into the line desired and rings in the proper manner. When the desired party is obtained, the telephone plug is removed and the attendant instantly inserts the remaining plug of the connecting cord which is being used for this connection.

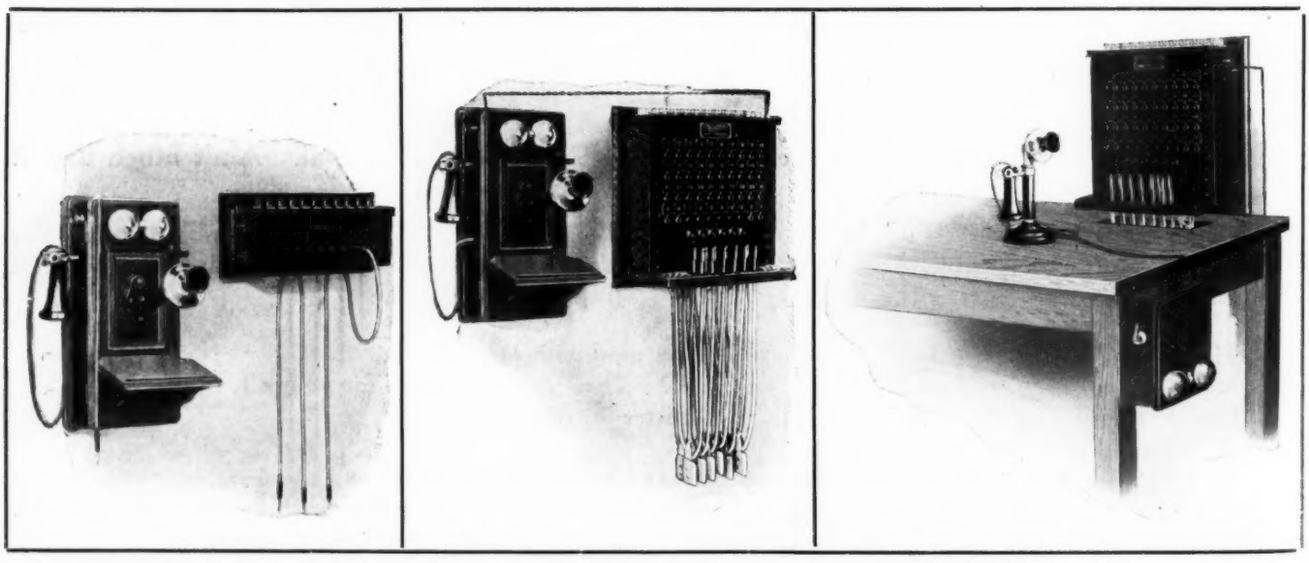
When the conversation is completed, either party or both, operating the hand generator, throws the line drop of the line into which the short plug of the connecting cord is inserted. This again operates the night alarm bell, notifying the attendant to take down the connection. The night alarm circuit can be arranged to give the regular night alarm continuous signal or, by the use of the proper drops and jacks, can be connected to the code night alarm contacts instead of the permanent night alarm contacts. In this way the signal given by the subscriber's hand generator, will be repeated to the night bell, indicating to the attendant whether the switchboard requires attention or not.



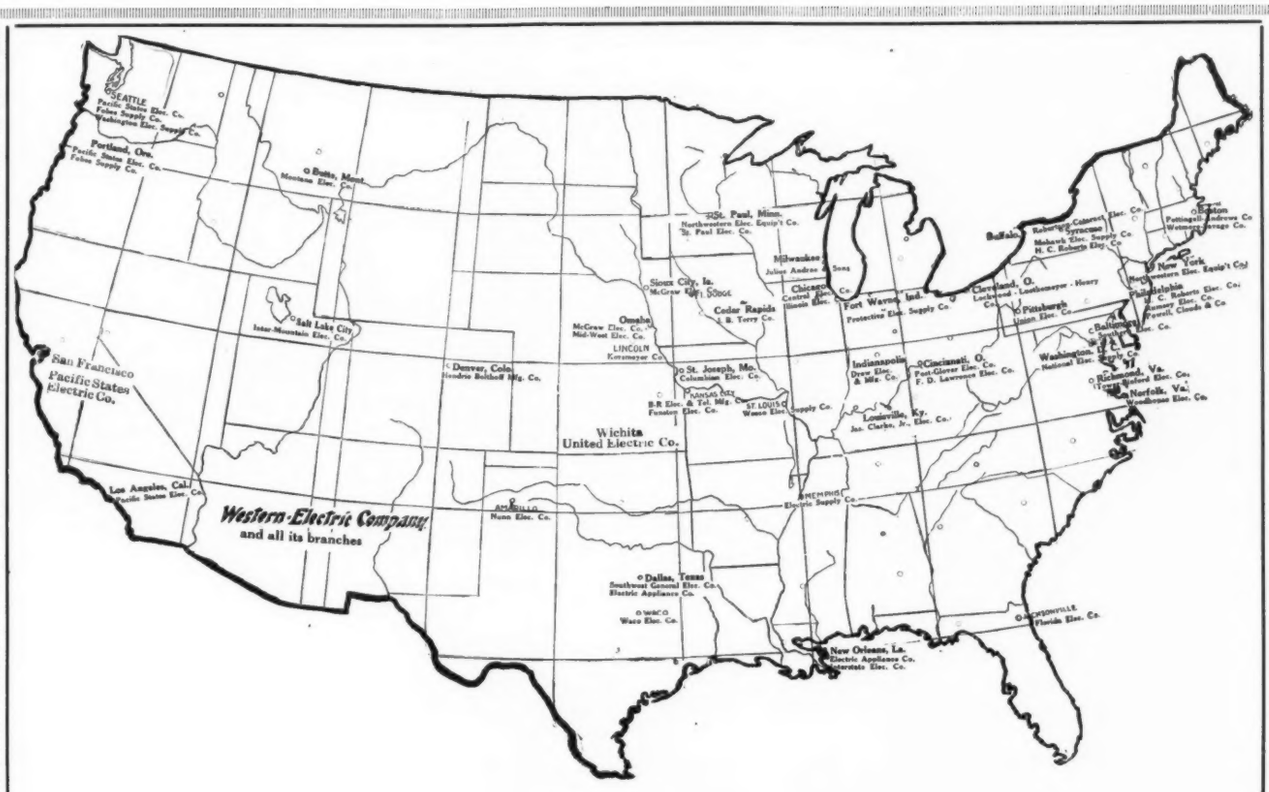
Kellogg 10-Line Magneto Wall Switchboard Installed with Table.

The other board, known as the No. 17-A magneto switchboard, is arranged for 30 local lines and four toll lines. There are six connecting cord circuits provided with keys for ringing, listening and ring-back features in connection with the regular magneto telephone. This board operates the same as the 10-line board just described, to the point at which the attendant's attention is called to the switchboard.

The call is answered by inserting the answering or rear plug into the jack of the calling line, automatically restoring the drop. The attendant then throws the key associated with this pair of cords in the locking position and determines the connection desired. The calling plug of the cord circuit in use is inserted into the jack of the desired line and the key thrown in the opposite or restoring position. The generator of the magneto telephone is then operated in the usual manner. The



New 10-Line and 30-Line Kellogg Magneto Wall Switchboards—Larger Board Installed with Table.



Nation Wide Distribution Makes OSHKOSH CONSTRUCTION TOOLS "Big Sellers"

In every important city of the United States there is an OSHKOSH jobber or sales representative. In some cities like Boston, Chicago, Kansas City, Dallas, Louisville, Kentucky, New Orleans, Philadelphia, Seattle, Syracuse, etc., there are several supply houses which specialize on OSHKOSH Tools.

Every branch of the Western Electric Company also handles OSHKOSH Tools, so that if you can't get them, it's your own fault.

You owe it to yourself to use OSHKOSH TOOLS. Results: Satisfaction; Pleasure; Economy; LABOR Efficiency—all urge you to select OSHKOSH TOOLS for your construction tools.

Write for a copy of the OSHKOSH catalogue

Oshkosh Manufacturing Company, Oshkosh, Wisconsin

Agents
H. B. Squires Company, San Francisco, and
F. K. Simons Electric Company, Widener Building, Philadelphia

attendant remains in on the connection until the desired party is obtained, at which time the listening key is restored to the normal position.

The disconnect after the conversation is completed, is given by either or both parties operating the hand generator, throwing the clearing-out drop associated with the cord pair in use and located directly above its listening key. This sounds the night alarm bell and calls the attendant. Code night alarm contacts may be used on the drops with this board the same as with the smaller equipment.

When it is desired to ring back on a connection, it may be accomplished by leaving the key of the cord pair thrown in the listening position and operating the hand generator, at which time the clearing-out drop is cut off the cord circuit.

These two new Kellogg switchboards can be operated not only with wall sets connected as indicated in the two photographic reproductions, but are said to be conveniently operated with desk stands on ordinary tables. In the case of the 10-line board, the desk set box can be mounted on the wall directly beside the board and the connecting telephone cord hanging from the desk set box will reach all of the jacks in the switchboard, as in the case of the compact wall set. If it is more convenient to place the desk set box beside the table as shown in one of the illustrations, then it is only necessary to secure the cord to a connecting rack and wire to the desk set box.

When the larger board, Code No. 17-A, is installed with a table, it is only necessary to cut a hole in the table top large enough for the cords and weights to pass through. The desk stand and box are wired in the usual way. These ordinary kitchen table installations are said to be inexpensive and especially convenient where the switching station must be installed in a general store or office where there is a certain amount of clerical work which the attendant must take care of, and yet at the same time give satisfactory attention to the operation of the exchange. The Kellogg Switchboard & Supply Co., Chicago, will send detailed information and prices of these boards upon request.

Phoney Bill Has Been Very Active of Late.

The activity in the telephone operating field is reflected on the June blotter calendar of the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y. Phoney Bill has been

Phoney Bill Says: "Enroll Under a Good Emblem."

exceedingly busy recently and now renders an accounting. Six exchange contracts are listed upon his bulletin board, to which he points with pride, saying: "Enrolled under a good emblem."

The company makes the announcement on its June blotter calendar that its factory will be closed for the annual vacation and repairs from July 3 to 10, and requests telephone companies to anticipate their requirements and place their orders early.

The Vac-M Arresters.

At this season of the year telephone companies are having, through the prevalence of thunderstorms, their attention directed to protective equipment for their lines. There are many types of protectors in use. One, which in the last few years has attracted favorable attention, is the vacuum type of arrester.

One of the oldest manufacturers of vacuum lightning arresters in the United States is the National Electric Specialty Co., Toledo, Ohio. This company has spent many years in perfecting its device—the Vac-M arrester—which has been sold in all sections of this country and Canada and South America as well as to other foreign countries.

The Vac-M line of arresters are stated to be made according to the most rigid specifications, and are thoroughly tested before shipment from the factory, every precaution being taken to insure that the customer receives satisfactory equipment. New equipment has recently been installed in the company's plant and it is in position to take care of customers promptly and efficiently. The company is glad to extend its facilities to aid in solving individual protection problems upon request.

The standing of the company with its customers indicates that its principles and practices are sound.

The Vac-M arresters are divided into two distinct classes, one for grounded or one-line circuits and the other for metallic or two-line circuits. There are different types of arresters of each class and each has its advantages. They are made in both the pear-shaped and tubular or so-called cartridge types.

The fundamental principle of the Vac-M lightning arrester is that of the vacuum which gives a very low resistance to static and high tension electricity. A much wider gap between the line and ground electrodes can thus be maintained with perfect safety and yet have as great or greater efficiency as an exceedingly small air gap.

Full information as to the Vac-M arresters may be obtained upon application to the National Electric Specialty Co.

Siam Telephone Statistics.

In the fiscal year 1915 Siam's telephone exchanges were four in number, and the service at the Bangkok exchange was carried on by 26 operators. The average number of connections made at the Bangkok exchange in 24 hours was 8,000. The total number of telephones installed was 794, of which 677 were connected with the central exchange, 99 were special telephones, 10 connected with the city of Nagor Pratoom, two with Paknam, two Dhanyaburi, and four installed at the Bangkok public pay stations.

A detailed account of the total network of telephone lines is not available, owing to the gradual removal of the overhead lines and the laying of underground cables in their place. The total extent of the lines is given as 9,186.6 kilometers (5,708 miles), part of which were underground cables, part river cable, part aerial cable, and 272 kilometers (169 miles) bare wire. The gross earnings for the year 1915 were $152,847, the expenditures $136,873, and the net profit $5,910, against a surplus of $6,553 for 1914.

New Stromberg-Carlson Equipment for New Ulm, Minn.

The directors of the New Ulm Telephone Co. of New Ulm, Minn., have authorized the construction of a new exchange building and have placed an order with the Stromberg-Carlson Telephone Mfg. Co., for a new central energy multiple switchboard with the associated storage battery, power equipment, main distributing frame and relay rack. This apparatus will replace the Stromberg-Carlson switchboard now installed at New Ulm, but as much of the old equipment is in good operating condition it will be utilized in the construction of the new switchboard. Likewise the protectors and terminals on the old main frame are good for many more years of service and will be placed on the new iron verticals.

Cut the cost of construction work with a

Miami Trailer

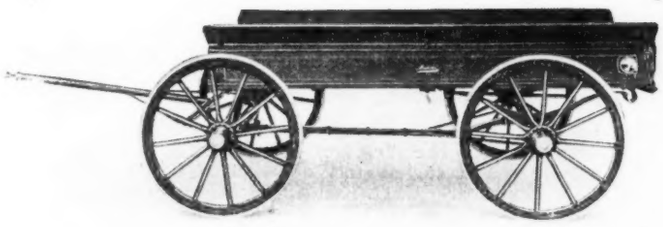
Just the thing you have been looking for to take "the gang" and tools to work.

One telephone company paid for theirs by bringing the men back to the noon meal each day. You can do the same.

Write for literature.

The Miami Trailer Company

Troy, Miami County, Ohio



Naturally—You Want the Best Results

Then, Why Don't You Get Acquainted With

'VAC-M' Lightning Arresters?

Appreciate the underlying principles and facts of combating electrical disturbers.

Do you know how to eliminate trouble from lightning, induction, crosses with high tension, static, sneak currents, etc.

Metallic Circuit

They don't ground the line.

Let us show you—Let us send you a catalog? It contains facts about Lightning Arresters that will surprise you.

The National Electric Specialty Co.

Terminal Bldg., Toledo, Ohio

The 70% boy

who j-u-s-t s-k-i-n-s through school at that mark, looms up at graduation just as big as the boy rated clear up to 100—the **difference** is not visible.

But at work, while force of circumstances starts many 70% men even with 100% men, from that moment on **the difference counts.**

And TELEPHONY—next to industry—makes **most** of the difference—ask any of the men who grade high.

Try 20 weeks of it for $1.00—5c a copy, and you will feel your percentage grow.

Address

TELEPHONY, Monadnock Block, CHICAGO

D. C. & WM. B. JACKSON

CHICAGO Harris Trust Bldg. **ENGINEERS** **BOSTON** 248 Boylston St.

Plans, Specifications, Supervision of Construction.
General Superintendence and Management.
Examinations and Reports.
Financial Investigations and Rate Adjustments.

EDWARD E. CLEMENT

Attorney at Law and Electrical Engineer

PATENTS

Soliciting, Consultation, Reports, Opinions

Office: McLachlen Building, 700 Tenth St., Washington, D. C.

TELEPHONE CO.'S TAKE NOTICE

HIGHEST PRICES

Paid for Old Telephone Equipment

Also gold, platinum and silver.

MILLER SMELTING & REFINING CO.

Ellastone Bldg., E. 4th & Prospect St. Cleveland, O.

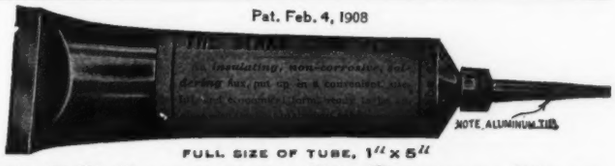
Insulated Staples

5 Sizes

Pat. Nov., 1900

BLAKE Specialties

STAPLES best for wiring.
TUBE FLUX best Flux for soldering.



FULL SIZE OF TUBE, 1" x 5"

BLAKE SIGNAL & MFG. CO., Write for Samples 251 Causeway St., Boston, Mass.